5-1-1979

RAIN: Journal of Appropriate Technology

ECO-NET

RAIN Journal of Appropriate Technology
$1.50—No Advertising
Vol. V, No. 7
May 1979

from Green Magic

RAINaccess

HEALTH

***Diet and Nutrition: A Holistic Approach*, Rudolph Ballentine, M.D., 1978, 634 pp., $7.95 from:**

Himalayan Institute Publishers and Distributors
RD 1, Box 88
Honesdale, PA 18431
717/253-5551

This book provides a basic overview of the science of nutrition (both Eastern and Western philosophies) and how it relates to the whole person. Recommended for students and others who wish to learn more about this holistic approach. —YL

***Wholistic Dimensions in Healing: A Resource Guide*, Leslie J. Kaslof, 1978, 295 pp., $7.95 plus $1.50 for UPS shipping from:**

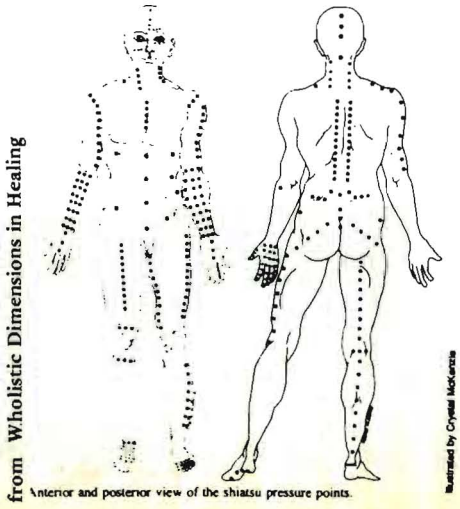
United Communications
P.O. Box 320, 233 Mosher Ave.
Woodmere, NY 11598

This book really warms a networker's heart. Leslie Kaslof has contacted over 50 "experts" (one of them happens to be my brother Phil) in the field of wholistic healing and asked them to write a brief explanation of their particular interest and then to provide an annotated listing of groups and associations; schools, centers and clinics; journals and publications; and products and services which are working in their area. What results is 295 pages crammed with the most useful organizations, etc. related to wholistic healing. —YL

***Healthwise Handbook*, Toni M. Roberts, Kathleen McIntosh Tinker and Donald W. Kemper, 1979, 250 pp., $6.95 from:**

Doubleday and Company, Inc.
Garden City, NY 11530

Do you have a headache? Should you lie down and rest? take an aspirin? or should you call a health professional? The *Healthwise Handbook* provides the answers to these and many other questions you may have about common health problems. Although it is not holistic in its approach, the *Handbook* provides useful how-to information on recognizing and treating common illnesses as well as offering suggestions on how to prevent them. Includes chapters on dental care, emotional problems and what to include in a "home health center." —YL



from Wholistic Dimensions in Healing

Anterior and posterior view of the shiatsu pressure points.

Illustrated by Crystal McKenzie

***Off Diabetes Pills: A Diabetic's Guide to Longer Life*, Rebecca Warner, Sidney M. Wolfe and Rebecca Rich, 1978, 121 pp., $3.50 from:**

Public Citizen
Health Research Group
Dept. 209, 2000 P St., N.W.
Washington, DC 20036
202/872-0320

"Drug companies spend $5,000 per doctor per year . . ." on promoting their various products. In the case of oral hypoglycemics (drugs to alleviate the symptoms of diabetes), this money is being used to promote drugs which are not only ineffective, but also "double the yearly death rate by heart and blood vessel disease in maturity-onset diabetics who use them." *Off Diabetes Pills* examines the problem of oral hypoglycemics, presents evidence which states that this medication is unnecessary, and outlines alternatives (by the use of diet) to control this disease. Appendices list diabetes centers across the country which will treat diabetics through diet. —YL

SMALL BUSINESS

***Why S.O.B.s Succeed and Nice Guys Fail in a Small Business*, $20.65 from**
Financial Management Associates
3824 E. Indian School Road
Phoenix, AZ 85018

Despite the title and style of this book, it contains more useful and detailed information for small businesses and self-employed people than anything else I've ever seen! How to track down the kind of lawyer you really want or need without paying telephone roulette. All sorts of legal and otherwise tax scams and loopholes and how to use them. How to deal with buying or selling a business. Fending off bureaucrats, getting free advertisement, making banks believe you are a good credit risk. All sorts of fair and unfair things that make up the reality of today's business world that you wish you'd known long ago. An excellent resource. Have your library get it so you don't have to pay for it. —TB

***In Business*, Jerry Goldstein, editor, bi-monthly, $14/yr. from:**
J. G. Press
Box 323
Emmaus, PA 18049

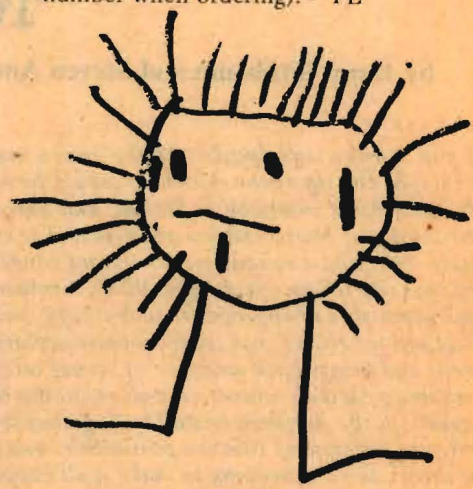
The first issue of *In Business* is finally out, and looks off to a good start as an idea, support and networking resource for people in, or thinking of getting into, small business. Accounts of innovative and successful small businesses that give a sense of what qualities are necessary and how to proceed; regular departments on financing, accounting, taxes, marketing, etc.—a useful combination of the personal qualities in commercial efforts, realistic business operation, and an emerging new world of good products and services. In setting up *In Business*, Jerry came across and is now working closely with a group called Support Services Alliance, Inc. set up to help self-employed people and small organizations gain economical access to services such as health insurance, retirement plans, legal inquiry and referral, and to work together for fairer regulations. An excellent concept (write to them at Two Times Square, New York, NY 10036, for more details), but a word of caution also—their president is comptroller of the Rockefeller Foundation, and their board of trustees includes presidents of two insurance companies, one large bank, etc. —TB

ENERGY

People's Energy Plan

Plans to compile a national non-nuclear People's Energy Plan were out before the accident at the Three-Mile Island Nuclear Power Plant, but with the near meltdown (as I write this it hasn't happened yet, thank God) at that plant, the need for a People's Energy Plan is even greater. The Institute for Ecological Policies, directed by Jim Benson, who is best known for his work on the Long Island Alternative Energy Study and other conservation issues (see *RAIN*, Vol. IV, No. 3), is hard at work organizing what is truly a grassroots effort in compiling such a plan. People from local counties will examine present local energy use; determine how much energy can be saved; and estimate how much of the remainder can be replaced by county-wide renewable energy sources. Once these county plans are completed, delegates will gather at a national conference and put together 50 state "soft path" energy plans. These state plans will be combined into the National Plan to be presented to federal, state and local officials by the 1980 elections.

The institute is preparing a guidebook for local counties who wish to participate in this vital and needed project. The guidebook is available for $5 from: Jim Benson, Institute for Ecological Policies, 9208 Christopher St., Fairfax, VA 22031, 703/273-9469 (include name of county and phone number when ordering). —YL



NIRS, the Nuclear Information and Resource Service, now has a toll-free phone service for safe energy activists. Interested parties can call 800/424-2477 Monday through Friday, between 1:00 p.m. and 5:00 p.m. (EST). —PC

Biomass Believers

20-20-20 is the motto of the International Biomass Institute. Their goal is 20 quads of energy from biomass by the year 2020 (currently biomass contributes 1.3 quads to the U.S.'s annual energy consumption of 75 quads). Dick Munson, coordinator of the Center for Renewable Resources and the Solar Lobby, presides over this non-profit organization devoted to research, education and promotion of biomass application in energy, farming and other fields. A membership newsletter, *Bio-Times*, is published six times a year.

For additional information write:
International Biomass Institute
1522 K St. N.W.
Suite 600
Washington, DC 20006
—PC

RAIN's office is at 2270 N.W. Irving, Portland, OR 97210. Ph: (503) 227-5110.

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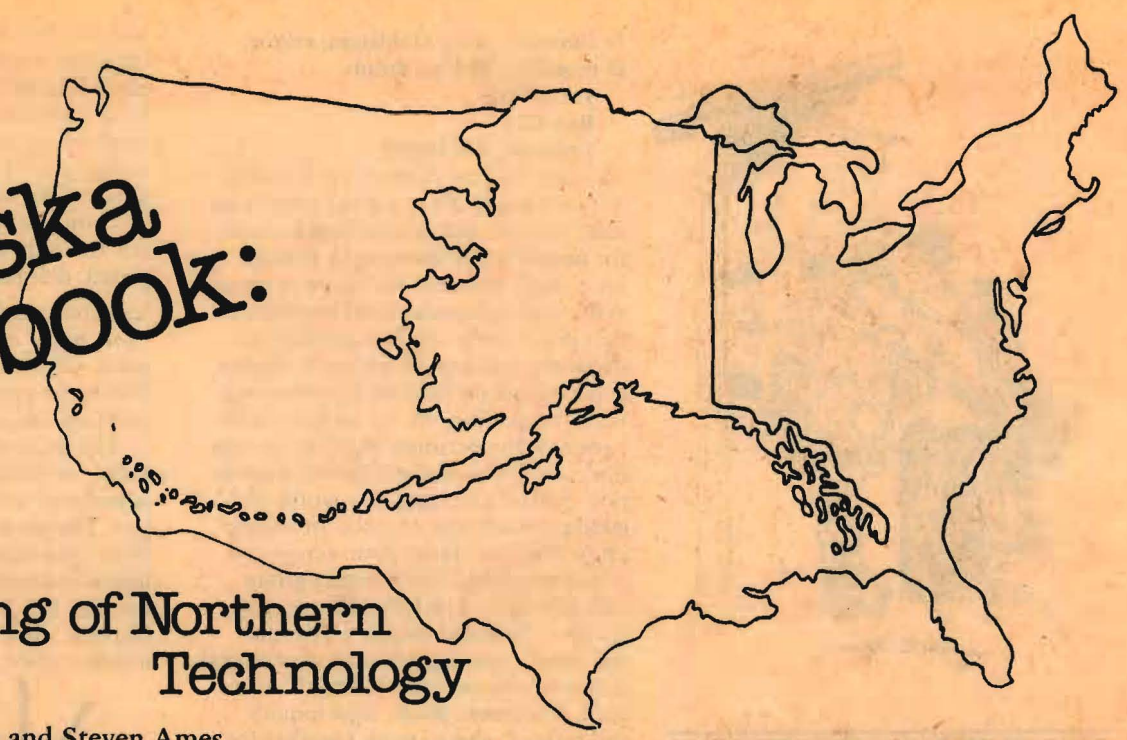

The Coming of Northern Technology

by Birny Birnbaum and Steven Ames

If you were to superimpose Alaska onto a map of the lower 48 states, the tip of the Aleutians would be in Los Angeles, the Southwest would be in Florida, and Barrow would be on the border of North Dakota and Canada! It's a country in itself—one whose unique resources and conditions make it ripe for self-reliance strategies. Birny Birnbaum, an organizer and networker in appropriate technology, and Northwest field rep for NCAT, has recently been exploring the Alaskan scene and brings back evidence of strong interest there in reshaping Alaska's winner-take-all economy into a sustainable model for the northern latitudes. Together we've condensed here an overview of Alaskan possibilities and a field sampler of those who are working to make it all happen. —SA

The economic history of Alaska has largely been one of uncontrolled exploitation carried out by absentee commercial interests. From its first colonization, through the early growth of unrestricted monopolies that extracted its natural wealth—furs, whaling and fishing, lumber, gold and other minerals—to its wartime domination by a defense establishment economy, Alaska's exploitation, as opposed to economic development, has proceeded without interruption. Even since statehood, Alaska has remained a colony of sorts, heavily tied into government subsidization. In 1969, federal expenditures in the state, dominated by military outlays, equaled three quarters of a billion dollars, or fully one-half of Alaska's total economic output. Hardly a diversified economy! Around that same time, oil was discovered along Alaska's North Slope,

NATIVE ALASKANS AND THE BUSH

In many ways, native people and rural villages are the bellwether of Alaska's future. The impact of a more-of-the-same extractive economy hits them first and hardest; the hope of localized renewable energy production and appropriate technologies may help save their cultures and the cooperative model they provide us all. Ultimately, their survival is our survival.

"Why Technology Has Fared Poorly in the Bush," Harold Sparck, article in four parts, April 5, 12, 19, 26, 1978,

***Tundra Times*, $20 per year from:**
639 "I" Street
Anchorage, AK 99501

An *excellent* investigation into how Alaskan villages are the end-of-the-end-of-the-line in a system on its way out, and why hi-tech won't work in rural settings, particularly in cold, northern climates. Very specific in detail—both of dismal failures and what advocacy planning around village micro-economies might look like. "Given the history of development in rural Alaska, more time is a good thing."

Rural Alaska Community Action Program
Box 3-3908
Anchorage, AK 99501
907/279-2441

RurAL CAP serves *all* of rural Alaska. The area is mind-boggling. Needless to say, travel is a large part of their budget. Like most CAPs, their energy component deals with emergency relief and weatherization—as well as energy advocacy. There are only 6-10 weeks out of the year when weatherization can be done in most areas. Materials have to be barged in. Barry Harmon, weatherization foreman, explains that the emphasis is on doing the job right because they'll never get a chance to go back a second time. They use materials that will last and spend more money on them than authorized by supervisory agencies in order to do a tight job. They emphasize working closely with village councils and training local people to do the actual work.

RurAL CAP provides strong technical assistance in coordinating testimony on energy problems and advocating rural needs in state and federal agencies. Energy program director Sherry Valentine is a strong advocate for low-income rural Alaskans and more: "Many rural Alaskan communities have not yet become dependent upon large faceless conglomerates for directly providing utility services. Instead, they run village generators and home heating systems on fuel for which they pay exorbitant prices and for delivery of which they are at the mercy of the seasonal and barge schedules. These isolated villages

initiating the newest and most intensive round of extractive pressure on the state, and forcing the resolution of conflicting land claims in order to allow the construction of the Trans-Alaskan pipeline. Increasingly, the feds had to assume that position of defending the constitutional rights of native Alaskans and the natural environment, while at the same time encouraging the further exploitation of Alaskan resources. Today that oil—needed or not—is flowing. Royalties and land settlements aside, the historically exploitive patterns persist. Alaska, alas, doesn't have an economy to call its own.

Economic development—as opposed to exploitation—has become the key Alaskan issue. It is one ripe with real possibilities and rotten apples. The pressures to develop are enormous; yet the way Alaska proceeds could have a profound impact on the use of land and resources, on bush lifestyles, and the structure of the state's entire economic future. Just as important, it will also determine whether Alaska succumbs to further rounds of economic exploitation in the guise of progress—or if Alaska can actually reclaim its long lost sense of identity and self-reliance, and perhaps push beyond into something totally new and exemplary.

To date most of the development debate has centered around the issue of wilderness, and how much of federal lands secured under the Alaska Native Claims Settlement Act of 1971 should be preserved as such. The battle between developers and environmentalists is clear cut, with preservationists scoring major victories of late. But anti-preservationists have frequently made half a good point: that *Alaska*, not outside interests, should be determining what happens to Alaska. Good for starters, but they've been swimming upstream in their own rhetoric. Former Governor Walter Hickel's appeals for economic freedom and Alaskan self-sufficiency, for instance, are nothing less than thinly disguised arguments for full-tilt development of coal, oil, minerals and what have you. Such development in Alaska's "self-interest" has very little to do with renewable resources, and nothing with economic self-reliance. The full-tilt scenario is a scam.

Native Alaskans, the indigenous people who have long known about locally self-reliant economies, are, ironically, those who have suffered the most at the hands of such development. In addition to large-scale land-intensive projects, their traditional lifestyles have been severely affected by both the federal welfare doles and technological colonization of the bush that follows. The Native Alaskan village—typically a blend of public service expenditures in housing and related services along with traditional food subsistence activities—has been invaded by the "other village"—a capital- and energy-intensive form of urban reconstruction, artificially supported by external funds and know-how—which undermines local cooperation and creates chronic dependencies where self-sufficiency once existed. Horror stories abound of inappropriate housing developments, gadget-filled educational facilities and extensive waste water treatment plants which have swollen local energy consumption and created exchange economies that can't be sustained. The native experience, in short, points to the fact that full-tilt development, even in the name of Alaska, destroys precisely what Alaskans need most: sustainable economies that they can control.

One wonders if the Alaskan state government, which under Governor Jay Hammond is trying to straddle the development v. preservation schism, is listening. Hammond talks about moderate development—paying as you go. He's well aware that Alaska receives a windfall in oil and mineral development royalties—more than 80 percent of state government expenditures are paid this way—but also interested in building up Alaska's development possibilities through its indigenous, renewable resources. Of course, renewable sounds great, but it's not the whole picture. So while state policy seeks to develop resources for Alaskan self-sufficiency, many strategies involve export markets rather than building local economies. While attention is given to small-scale technologies and the auctioning off of state land for small-scale, diversified farming, the government goes courting foreign trade partners and sets aside 60,000 acres to grow barley for export.

One good sign of some kind of commitment has been the creation of an Office of Northern Technology, not unlike California's OAT, to promote through policy planning an obligation to consider regionally appropriate technologies in any venture undertaken by any state agency. In an economy like Alaska's, that could be significant. ONT is seen in its staff person, Bill Luria, as an advocate's office, catalyzing in other

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of 100-200 people then can provide a near-perfect milieu for community-based energy systems which utilize local control."

Tribal Non-Profit Corporations

There are 100 million acres of land deeded to Native Alaskans as a result of the settlement act of 1971. This land is divided into 12 geographic areas, each area corresponding to a for-profit tribal corporation, which in turn has one or more affiliate non-profit corporations. Tanana Chiefs is one of three non-profits associated with the Doyon Tribal Corporation. Morris Morgan works with 43 villages in the Tanana Chiefs area on home gardening, emphasizing education and community acceptance of growing food. Morris says there is too much done to and for native Alaskans, which has excluded them. In light of true self-determination, a garden is okay. He plans to work with those villages ready and eager to construct a village center for food preservation and a solar greenhouse. To Morris, the native village's carrying capacity and indigenous resources are the most important design factor. Patience is a prime consideration.

ENERGY

Contrary to popular belief, the northern latitudes receive more possible hours of sunlight in a year than do the tropics. Yet as of January 1978, there were no solar structures located in Alaska. . . . Among the most pressing reasons to push for solar and other forms of decentralized, renewable energy systems are the rapidly escalating costs of conventional fuels and Alaska's sparsely settled population. In some villages fuel oil costs $2.20 per gallon, and 20¢ per kilowatt-hour of electricity.

***Solar Energy Resource Potential in Alaska*, Richard D. Seifert and John P. Zarling, 79 pp., from:**
Institute of Water Resources
University of Alaska
Fairbanks, AK 99701

Rich Seifert is one of the most active people in the state working to develop greater solar energy usage. This study concentrates on the application of solar energy to domestic hot water heating needs in Alaska with an economic analysis using the f-chart computer program. Good insolation data and recommendations. "The economic appeal of solar energy becomes more apparent the farther north in the state one travels. . . . In Barrow, a solar-heated hot water system, when compared with an electric one, looks quite appealing."

Rich also talks of modular design with climate specific options; he is involved in a solar design study and demonstration project for a rural school and performing energy end-use analyses of various energy flows.

Alaska Notebook:

agencies a commitment to development that is appropriate in scale. Two groups with which ONT hopes to work are Alaska's Council on Science and Technology, a committee of legislators, researchers and citizens set up to determine research needs for the state, and the Renewable Resources Development Corporation, a financing mechanism funded by oil and mineral royalties ($10 million this fiscal year) to promote a stable economic base through the use of renewable resources. Both groups are well established, have legislative mandates and no expressed commitment to the northern technology concept. This is partially reflected in RRDC's sometimes hi-tech—albeit renewably-based—development proposals, such as the $2 billion Susinta Dam. But some speculate that with the right emphasis, these three groups could form a progressive triad capable of coordinating and capitalizing a totally new approach to regional development—one sensitive not only to a renewable resource base, but to scale and local self-reliance as well. There is potential in the air.

That potential is supported by a surge of acknowledgement that Alaska is in a unique situation. The finite nature of this nation's fossil fuel reserves (Alaska Pipelines aside!) and Alaska's end-of-the-line position in most vital distribution systems make it especially vulnerable to changing times. Rural Alaska is already reeling from such pressure to the extent that it has become dependent on the outside world. There is little sense in becoming more interlocked in such an economy by selling raw materials and commodities and buying back goods and services that fit local needs poorly and cost so much. The

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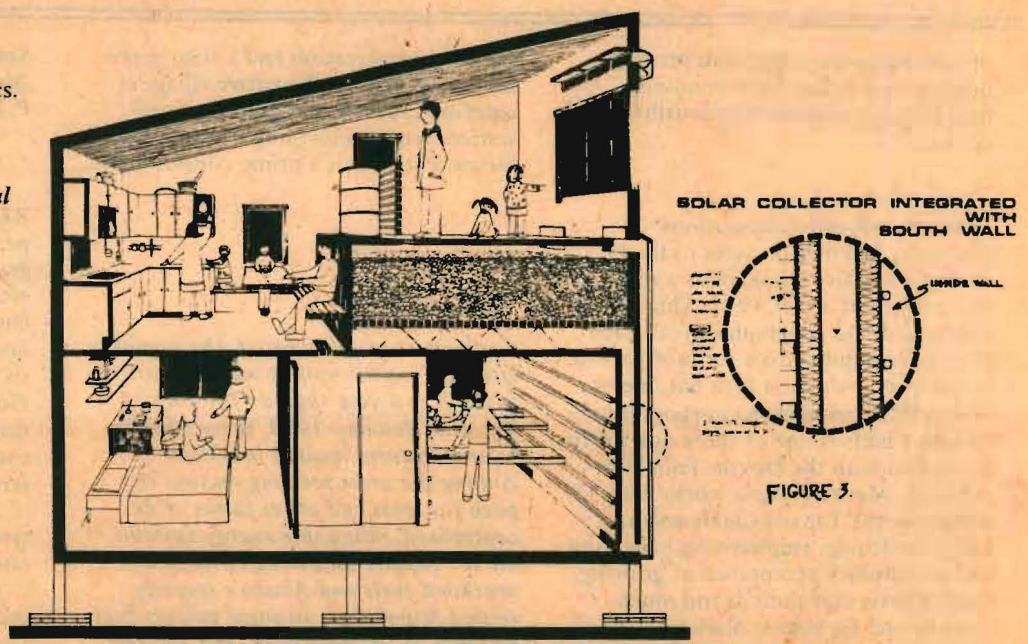
"Solar Tempered Arctic Housing," by Hai-Toh Lim, pp. 17-26, in *The Northern Engineer*, Vol. 9, No. 3, from:
Geophysical Institute
University of Alaska
Fairbanks, AK 99701
"A solar-tempered home that incorporates an inexpensive and simple solar system to carry part of the heating load is feasible, even in the arctic. With sufficiently low initial and operating costs, a homeowner could afford not to collect solar energy during the dark winter or on cloudy days." Intriguing schematics.

***How to Build a Super-Insulated House*, by Project 20-20, 1978, $3.00 from:**
Cold Weather Editions
P.O. Box 81961
College, AK 99708
Ed McGrath's short book notes insulation considerations peculiar to arctic climates, concentrating on framing, materials, "holes", mass and economics. Valuable to cold-climate builders and weatherizers.

***Geothermal Energy and Wind Potential in Alaska*, by Tunis Wentink Jr. and Robert Forbes, April 1976, from:**
Geophysical Institute
University of Alaska
Fairbanks, AK 99701
Surveys of geothermal resources and applications and wind resources in Alaska.

AGRICULTURE

***A Design for Agriculture in the Tanana Loop: Appropriate Technology and Small-Scale Farming*, Samuel Skaggs and Wendy Warnick, September 1978, 61 pp., from:**
Office of Northern Technology/
State of Alaska
Pouch AD
Juneau, AK 99811
A solid contribution to local self-reliance in Alaska sponsored by the Office of Northern Technology. Tanana Loop is an area near Fairbanks where 20-to-320 acre plots were auctioned off in April 1978 by the state for small-scale farming and where 81 percent of the purchasers have indicated that they would like to be involved in cooperative marketing and/or direct farmer to consumer markets. *Tanana Loop* discusses agricultural rights, renewable resource potential, specific case examples and related cottage industries, public policy choices and marketing alternatives which would benefit appropriate technology and agriculture throughout the state. Good directory of resource people throughout the state. "Alaska can play 'catch up' and make efforts to legitimize itself by creating the same type of fossil fuel dependent agriculture which has evolved in the lower 48 in the past 30 years, or Alaska could be a leader in developing new technologies and energy substitutions, and new systems for land tenure, marketing and transportation." Consultants Skaggs and Warnick can be reached at Box 73431, Fairbanks, AK 99707.



An Arctic passive solar prototype: hot air collectors are integrated in the south wall, utilizing recycled beverage containers, gravel thermal storage, and operating by natural convection. This augments conventional fuel systems. Not the most efficient adaptation, but cheap and easy to build. From Solar Tempered Arctic Housing.

opportunities to reshape Alaska's food and energy systems, encouraging the broad use of small-scale, regionally appropriate technologies, is looking better all the time. Besides encouragement from some state policy, there are not nearly as many institutional barriers so common to the lower 48 states. In the area of energy, for instance, Alaska's lack of electric grids and the exorbitant costs of bringing conventional fuels to both bush and cities make decentralized, renewable energy systems all the more attractive. Solar energy systems at $20 to $25 per square foot, total initial cost, are competitive with electricity for hot-water heating in nearly all areas of Alaska—*in Alaska!*—even though they cannot provide 100 percent of all heating needs.

The promise of developing its own northern technologies and local economies is a mobilizing factor of real strength for Alaskan activists. Food, energy, community action and environmental groups—along with back-up institutional support—are cropping up in the major population centers, networking around research and demonstration projects that may change the conditions under which Alaska reaches for self-determination. Fairbanks, the second-largest city, is a center for grassroots innovators and inventors doing work with food and energy production. Anchorage, the state's center of business and finance, houses organizations working exclusively with rural Alaska and its issues. Juneau, Alaska's capital, may see important initiatives coming from the government that will make a difference. These outposts of activism in a state so vast and sparsely populated have much work ahead of them, yet their various efforts, if well-coordinated, could teach the rest of the country—and cold-climate peoples everywhere—a lot about the ways in which we need to move. Below, we've collected in one place some of the good groups, projects, articles and resources from up there in the field that caught our attention:

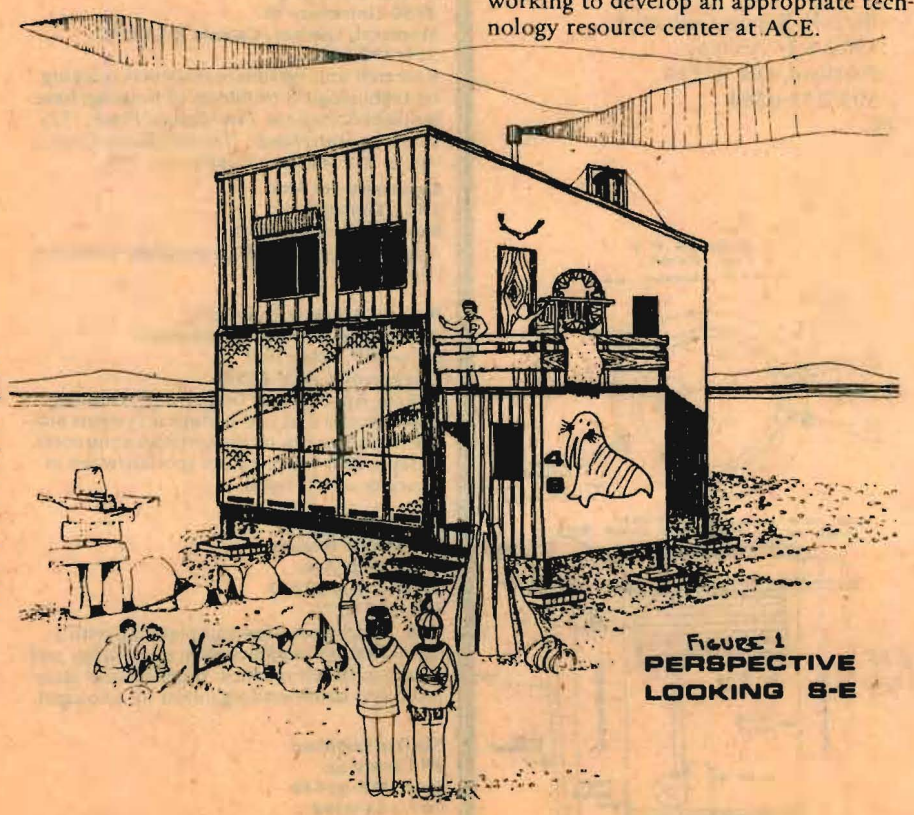
Fairbanks Environmental Center
461 Steese Highway
Fairbanks, AK 99701

Besides its environmental and conservationist work in and around Fairbanks, the Center is sponsoring a VISTA project as a follow-up to the *Tanana Loop* report on small-scale farming. Staffer Helen Ross is investigating the institutional barriers to such agriculture in great depth. This project is receiving assistance from VISTA in Alaska (contact: ACTION, Box 1957, Anchorage, AK 99501).

APPROPRIATE TECHNOLOGY

Alaska Center for the Environment
1069 West 6th
Anchorage, AK 99501
907/274-3621

Apart from its extensive work in Alaskan wilderness preservation issues, ACE has done a lot in the area of appropriate technology and solar energy. Nancy Lee (a former *RAIN* staffer!) is the prime Alaskan networker in these areas. Nancy's the Alaska delegate to the Solar Congress, a SUN Day organizer and is working to develop an appropriate technology resource center at ACE.



From The Northern Engineer

FIGURE 1
PERSPECTIVE
LOOKING S-E

Office of Northern Technology (Division of Policy Development and Planning, Office of the Governor)
Pouch AD
Juneau, AK 99803

Northern Technology is Alaska's way of saying *regionally* appropriate technology. And among the other agencies that are encouraging such alternatives through small grants programs or revolving loan funds, the Office of Northern Technology (established in September, 1978) is specifically seen as the government's in-house advocate for "methods of energy production, waste disposal, recycling, food production, transportation, building design, and industrial enterprise which are more efficient, less costly and less energy-intensive than those methods presently utilized, and which are appropriate to the Alaskan environment." Besides its involvement in the Tanana Loop area, ONT recently sponsored the design and construction of an energy-conservation home suited to northern owner-building by community college students, and is advising other schools and government agencies on construction plans and alternative technology building workshops. Slide and video presentations on *A House for Bethel* are available from ONT.

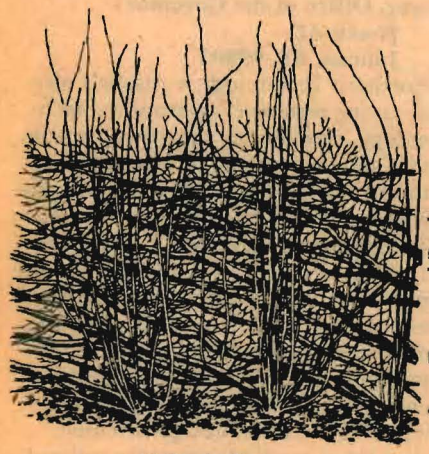
Alaska Federation for Community Self-Reliance
Box 73431
Fairbanks, AK 99701

Recently something of a political force, this group promotes energy conservation, appropriate technology and good building practices. One of their members, Brian Rogers, is a state legislator.

AGRICULTURE

***The Farmstead Book I*, Paul Herman, editor, 1979, 258 pp., $8.95 from:**
Madrona Publishers, Inc.
2116 Western Ave.
Seattle, WA 98121

Practical, ingenuous, simple—qualities I often associate with the successful small farmer, also describe the style of this book. *The Farmstead*, Vol. I, the first in a series of books drawing upon the wisdom accumulated in farm bulletins over the past 75 years, focuses on the soil, the farm workshop and the woods. Attractive layout and illustrations combined with such useful articles as "Nitrogen-Fixing Bacteria and Legumes" encourage one to read on. A useful supplement to the small landholder's library. —Bill Triest /PC



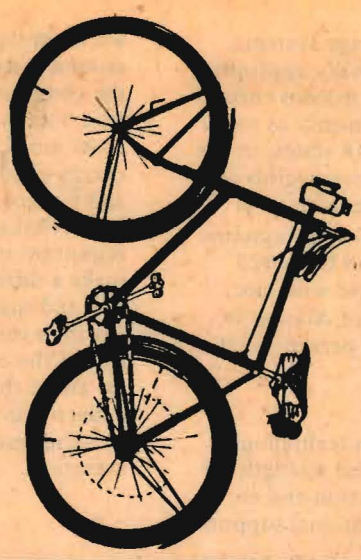
from Farmstead Book

Hedge laying

SOLAR

***Build a Drain-Down Solar Water Heater*, Christopher Fried, 1979, 41 pp., $2.75 plus $1 shipping and handling from:**
Christopher Fried
Energy Consultant
R.D. 3
Catawissa, PA 17820

Here's a solar water heater designed for below freezing temperatures, using electric valves, a heat exchanger and a pump. Last February this system was used for a hands-on workshop by the Pennsylvania Department of Community Affairs and has successfully operated in —15 degree C. air temperatures. Cost estimates are $550 for materials and $50-$100 for installation. Drawings, materials list and step-by-step instructions are included. —PC



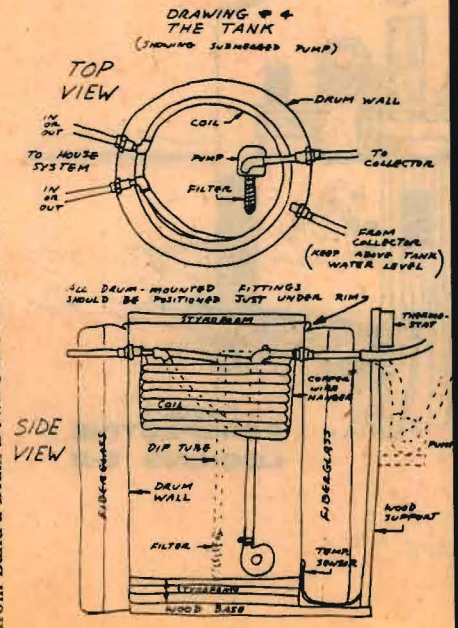
TRANSPORT

Bicycle Trailers

Casey Burns, a member of our local bicycle collective is producing light-weight, heavy-duty bicycle trailers. The design consists of canvas duck stretched over a conduit tubing frame and 27" wheels. Recommended loads are 150-175 lbs. Trailers are built by commission with a negotiable price ranging between $90 and $95. Casey has transported with ease such items as an 80-lb. table, a push lawn mower and a 40-lb. drill press. For more information contact him at:

Bicycle Repair Collective
1912 S.E. Ankeny
Portland, OR 97214
503/233-0564

—PC



from Build a Drain-Down Solar Water Heater

Ecology Action of the Midpeninsula
2225 El Camino Real
Palo Alto, CA 94306
415/328-6752
Biodynamic/French Intensive Method of small-scale farming; one and two year apprenticeship programs; three-month orientation course only (early June).

Community Environmental Council Inc.
924 Anacapa St., Suite B4
Santa Barbara, CA 93101
805/962-2210
Five-month program (lectures/practical work, 20 hours/week) in bio-intensive agriculture.

The Summer Program in Social Ecology
Box SE-17
Goddard College
Plainfield, VT 05667
Program stresses alternatives in health, technology and social strategies. A 40-acre farm is the site of workshops on architectural design and construction, aquaculture, French intensive gardening, acupuncture, yoga, massage and more.

Tilth
13217 Mattson Road
Arlington, WA 98223
206/435-4648
An educational and scientific organization devoted to biologically sound agriculture for the Pacific Northwest. Winter gardening workshops will be held May 19.

University of New Mexico
School of Architecture & Planning
Albuquerque, NM 87131
505/277-3133
3-week summer programs at D. H. Lawrence Ranch, Taos, NM, includes theory, design, hands-on construction, energy conservation, solar application.

Minimum Cost Housing Group
School of Architecture
McGill University
3480 University St.
Montreal, Quebec, Canada H3A 2A7
514/392-5408
Research unit (graduate students) working on technological problems of housing; have published *Stop the Five-Gallon Flush*, '73; *Rooftop Wastelands*, '76, and *Water Conservation and the Mist Experience*, '78.

University for Man
1221 Thurston
Manhattan, KS 66502
Appropriate Technology program combines courses and projects.

Western Virginia University
Technology Education Program
Suite 609, Allen Hall
Morgantown, WV 26506
M.S. in Appropriate Technology. Courses focus on the study of technical systems and their relationship to the civilization process. Independent study allows specialization in a variety of a.t. fields.

Antioch West
Northwest Region
1729 17th Ave.
Seattle, WA 98122
206/323-2270
M.A. in urban studies and planning with a specialization in appropriate technology and community self-reliance. Combination classroom and hands-on (organized by Ecotope).

Shelter Institute
38 Centre St.
Bath, ME 04530
207/443-9084
House design seminars, practical experience, cabinetry.

Often the greatest benefits derived from hands-on workshops are the intangibles which aren't advertised in the brochures—the sense of community, the shared values, the feeling of confidence. The following is a partial list of organizations which provide workshops and courses in appropriate technology. Several organizational and business workshops are included because of their value to a.t. groups. Any additions or feedback from our readers would be greatly appreciated. —PC

Learning by Doing

from Farallones

Cornerstones
Wing School of Shelter Technology
54 Cumberland St.
Brunswick, ME 04011
207/729-0540
Workshops combining lectures and hands-on experience in passive solar house building, retrofitting existing structures, solar greenhouses, passive solar design.

Total Environmental Action
Church Hill
Harrisville, NH 03450
603/827-3361
Workshops on solar energy retrofits, passive solar and greenhouse design plus alternative waste treatment methods, heating with wood, water power and more.

Heartwood
Owner-Builder School
Johnson Road
Washington, MA 01235
413/623-6677
3-week residential course—introduction to design and house construction. Areas covered include plumbing, electrical, foundation, passive solar design, site and structural considerations.

The Land Institute
Rt. 3
Salina, KS 67401
Special 3-week course on energy June 4-June 29—classroom and hands-on projects in solar and wind electric. Regular semester program is devoted to a search for alternatives in agriculture, energy, shelter and waste.

Solar Sustenance Team
Rt. 1, Box 107 AA
Santa Fe, NM 87501
Workshops to train people to lead solar greenhouse workshops.

The Farallones Rural Center
15290 Coleman Valley Road
Occidental, CA 95465
707/874-3060
Offers a wide variety of educational programs ranging from one- and two-day practicums and discussions on technology and culture to residential skills training workshops in solar space and water heating, low-cost building techniques, intensive horticulture, as well as alternative water and waste systems.

Water Pumping Windmills
Box 3501
New Mexico State University
Las Cruces, NM 88003
Two-week workshop includes maintenance, erection of tower, installation of new mills and more.

Domestic Technology Institute
Box 2043
Evergreen, CO 80439
303/988-3054
Workshops include greenhouse design/construction, community energy technology, small-scale food production, nutrition and food preservation, plus energy-integrated shelter.

Portland Sun
3334 S.W. 1st
Portland, OR 97201
503/241-0317
Attached solar greenhouse and solar water heating workshops.

Ecotope
2332 East Madison
Seattle, WA 98112
206/322-3753
Workshops on solar greenhouses and solar water heaters.

School of Living—Deep Run Farm
RD 7, Box 388A
York, PA 17402
717/755-1561
Modern homesteading weekend workshops.

Country Workshops
Route 3, Box 221
Marshall, NC 28753
Preservation of craft knowledge and techniques used by traditional rural people; seminars include rural woodworking, processing kudzu, logbuilding, chairmaking. July-Sept.

Environmental Studies Homesteading Program
Western Michigan University
Kalamazoo, MI 49008
616/383-3984
Participants live on the farm as part of the educational experience. Programs focus on small-scale farming based on organic methods of vegetable, field crop and livestock production. Readings compliment farm activities. Summer program June-Aug.

New School for Democratic Management
589 Howard St.
San Francisco, CA 94105
415/543-7973
One week courses and workshops in such courses as financial management, accounting, community economic development, democratic management and marketing.

Ryegrass School
P.O. Box 10
Uniontown, WA 99179
Education programs for groups in the Northwest include organization building, maintenance, strategies and tactics.

Steady-State Economics, Herman Daly, 1977, $5.95 from:
W. H. Freeman & Co.
660 Market Street
San Francisco, CA 94104
Don't, like me, confuse this with Daly's earlier Toward a Steady-State Economy. *It's his second book, and a classic. It should be required reading for anyone wanting to understand the basic changes needed today in our economic thinking. Necessary institutional changes in their simplest, most direct form. How to include the free work nature does for us into our economic accounting. How to replace GNP with meaningful accounting indices. And much more. Best economics stuff since* Small Is Beautiful. *Highly recommended. —TB*

Steadying the State

. . . The implication is that man is no longer totally dependent upon his environment, or at least that he has become less dependent. Presumably, technology has made man increasingly independent of his environment. But in fact, technology has merely substituted nonrenewable resources for renewables, which is more an increase than a decrease in dependence. . . .

. . . Growth in GNP should cease when decreasing marginal benefits become equal to increasing marginal costs. . . . But there is no statistical series that attempts to measure the cost of GNP. This is growthmania, literally not counting the costs of growth. But the situation is even worse. We take the real costs of increasing GNP as measured by the defensive expenditures incurred to protect ourselves from the *unwanted* side effects of production and *add* these expenditures to GNP rather than subtract them. We count real costs as benefits. This is hypergrowthmania. . . .

. . . The other reason for [focus on income rather than wealth] is ideological. Concentrating on flows takes attention away from the very unequally distributed stock of wealth that is the real source of economic power. The income flow is unequally distributed also, but at least everyone gets some part of it. . . .

. . . "Growth is a substitute for equality of income. So long as there is growth there is hope, and that makes large income differentials tolerable." We are addicted to growth because we are addicted to large inequalities in income and wealth. What about the poor? Let them eat growth! Better yet, let them feed on the hope of eating growth in the future!

We have been growing for some time, and we still have poverty. It should be obvious that what grows is the reinvested surplus, and the benefits of growth go to the owners of the surplus, who are not poor. Some of the growth dividends trickle down, but not many. . . .

Perhaps, as a *minimum* definition, the ultimate benefit could be considered as the survival and continuation of the evolving life process through which God has bestowed upon us the gift of conscious life.

"Men nearly always speak and write as if riches were absolute, and it were possible, by following certain scientific precepts, for everyone to be rich. Whereas, riches are a power like that of electricity, acting only through inequalities or negations of itself. The force of the guinea you have in your pocket depends wholly on the default of a guinea in your neighbor's pocket. If he did not want it, it would be of no use to you; the degree of power it possesses depends accurately upon the need or desire he has for it, and the art of making yourself rich, in the ordinary mercantile economist's sense, is therefore equally and necessarily the art of keeping your neighbor poor." John Ruskin, 1860

"Now it is true that the needs of human beings may seem to be insatiable. But they fall into two classes—those needs which are absolute in the sense that we feel them whatever the situation of our fellow human beings may be, and those which are relative in the sense that we feel them only if their satisfaction lifts us above, makes us feel superior to, our fellows. Needs of the second class, those which satisfy the desire for superiority, may be indeed insatiable: for the higher the general level, the higher still are they. But this is not so true of the absolute needs—a point may soon be reached, much sooner perhaps than we are all of us aware, when these needs are satisfied in the sense that we prefer to devote our further energies to non-economic purposes." J. M. Keynes, 1931.

The upshot is that in orthodox economics all scarcity is considered merely relative, while the class of all wants is accorded the insatiability of relative wants but is invested with the moral earnestness of absolute wants.

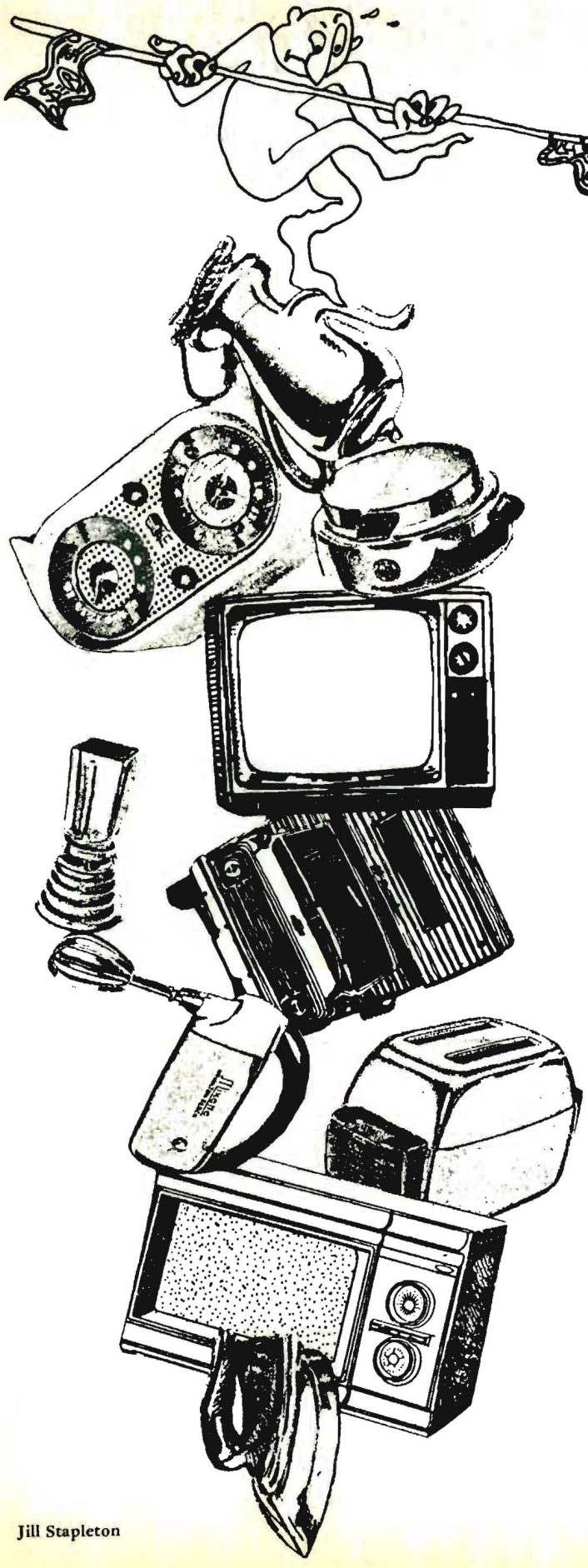
Higher prices on basic resources are absolutely necessary. Any plan that refuses to face up to this necessity is worthless. Back in 1925, economist John Ise made the point in these words:

> "Preposterous as it may seem at first blush, it is probably true that, even if all the timber in the United States, or all the oil or gas or anthracite, were owned by an absolute monopoly, entirely free of public control, prices to consumers would be fixed lower than the long-run interests of the public would justify. Pragmatically this means that all efforts on the part of the government to keep down the prices of lumber, oil, gas, or anthracite are contrary to the public interest; that the government should be trying to keep prices up rather than down."

Ise went on to suggest a general principle of resource pricing: that nonrenewable resources be priced at the cost of the nearest renewable substitute. Therefore, virgin timber should cost at least as much per board foot as replanted timber; petroleum should be priced at its BTU equivalent of sugar or wood alcohol, assuming they are the closest renewable alternatives. In the absence of any renewable substitutes, the price would merely reflect the purely ethical judgment of how fast the resources should be used up—that is, the importance of the wants of future people relative to the wants of present people.

. . . development historically is primarily the result of attempts to increase the output from the environment rather than produce a given output more efficiently. The price of growing beyond our ecological niche is that the workload increases. As the workload increases, the development of labor-saving techniques becomes necessary. These adaptations do not necessarily increase efficiency above what it was before the adaptation became necessary. . . .

A job that is not worth doing is not worth doing well. In economists' jargon the marginal benefit of an improvement in purpose is enormously greater than the marginal benefit of an improvement in technology. And the marginal costs are enormously lower.



Jill Stapleton

. . . The alternative here recommended is the long-run view of stewardship for the indefinite future; that is, let us try to take good enough care of the ecosphere (keep our consumption demands well below the ecosphere's maximum capacity) so that it will last a long time. . . . A second ethical proposition is that there is or should be such a thing as *enough*. . . . A third ethical principle is that the claims on resources of those who are well above the minimum and certainly over the claims of those who are above the maximum and whose tastes have become so jaded that they must be artfully cajoled into further consumption. . . . A fourth ethical proposition is that the minimum requirements of people already born should take precedence over the population's reproductive desires in excess of replacement. . . .

For the traditional religious attitude, there is such a thing as material sufficiency, and beyond that admittedly vague and historically changing amount, the goal of life becomes wisdom, enjoyment, cultivation of the mind and soul, and community. It may even be that community requires a certain degree of scarcity, without which cooperation, sharing, and friendship would have no organic reason to be, and hence community would atrophy. Witness the isolated self-sufficiency of households and the lack of community in affluent middle-class suburbs.

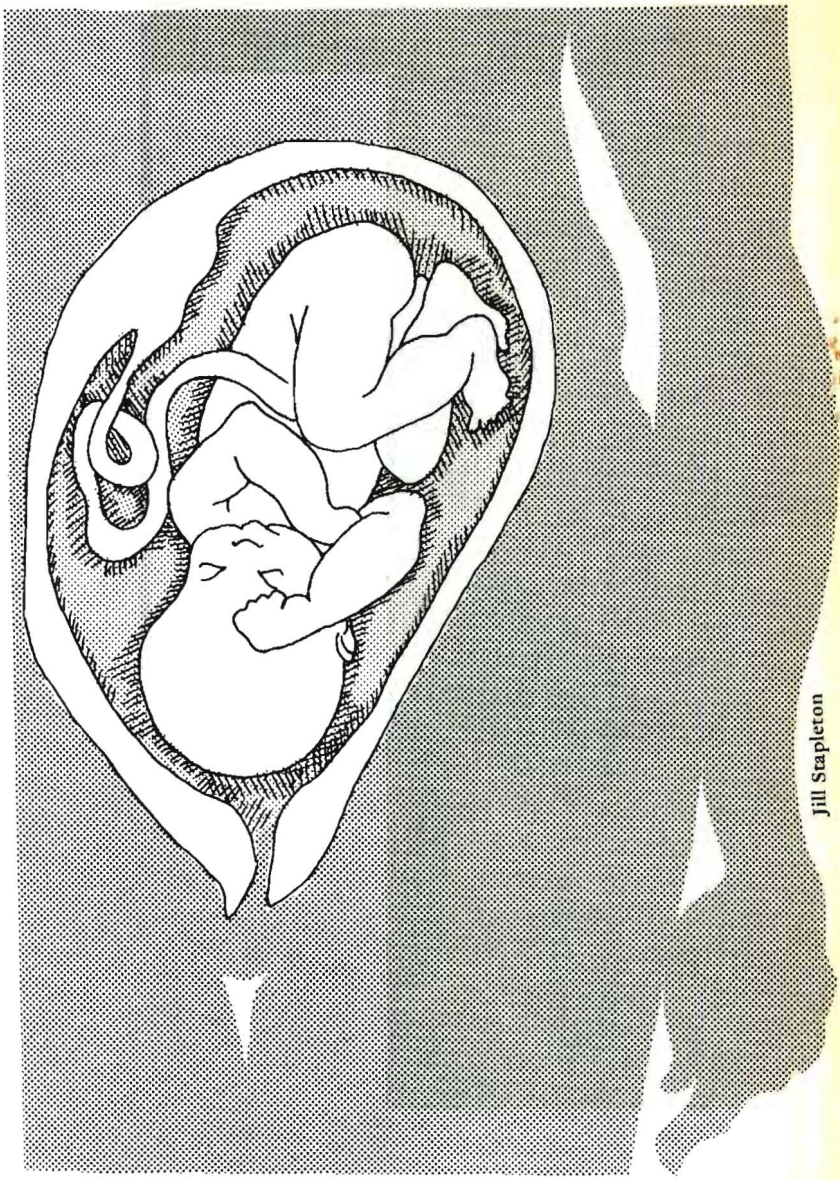
The kinds of institutions required follow directly from the definition of a steady-state economy: constant stocks of people and artifacts maintained at some chosen, sufficient level by a low rate of throughput. We need (1) an institution for stabilizing population (transferable birth licenses); (2) an institution for stabilizing the stock of physical artifacts and keeping throughput below ecological limits (depletion quotas auctioned by the government); and (3) a distributist institution limiting the degree of inequality in the distribution of constant stocks among the constant population (maximum and minimum limits to personal income and a maximum limit to personal wealth).

The idea that technology accounts for half or more of the observed increase in output in recent times is a finding about which econometricians themselves disagree. For example, D. W. Jorgenson and Z. Grilliches found that "if real product and real factor input are accurately accounted for, the observed growth in total factor productivity is negligible." In other words, the increment in real output from 1945 to 1965 is almost totally explained (96.7 percent) by increments in real inputs, with very little residual (3.3 percent) left to impute to technical change. . . . Maddala found that for the bituminous coal industry "growth in labor productivity can be explained almost totally by a rise in the horsepower per worker. Thus what formerly was considered as technical change now appears as a process of factor substitutions."

"By your works may you be known. Your triumphs in the mechanical arts are the obverse of your failure in all that calls for spiritual insight. Machines of every kind you can make and use to perfection; but you cannot build a house or write a poem, or paint a picture; still less can you worship or aspire. . . . Your outer man as well as your inner is dead; you are blind and deaf. Ratiocination has taken the place of perception; and your whole life is an infinite syllogism from premises you have not examined to conclusions you have not anticipated or willed. Everywhere means, nowhere an end. Society is a huge engine and that engine itself out of gear. Such is the picture your civilization presents to my imagination." from Dickinson's *Letters of John Chinaman*

GIVING BIRTH

by Lane de Moll



Jill Stapleton

It's been hard to find time or energy in the midst of my new duties as a mother, but this morning it feels important to leave the pile of diapers be and catch a few hours while Skye sleeps to write down some of my thoughts about our pregnancy and birth. It's tempting to write a blow-by-blow account of the ups and downs of the birth itself, but I've read so many such stories that I've become a bit jaded on them. There are as many variations on the theme as there are births, but many good collections of them exist (see below) and I'll not add mine to the pile. It seems more important to dig more deeply than the immediate experience into the learning that I did—and am doing—in the almost magical process of being with child.

Suffice it to say that we planned a homebirth with my brother and his family attending, assisted by a wonderful nurse-midwife we had been working with throughout the pregnancy. I went to a doctor twice—once in my third month and again in the last month. The rest of the time I had my prenatal check-ups with the midwife. The labor began at home and went well for several hours, but then with my cervix dilated 8 cm (the special time called transition), something stalled. After eight hours, at the same stage with multiple contractions and strong urges to push, we decided to go to the hospital. The combination of the bumpy 25-mile drive and a catheterization did the trick, and Skye was born an hour after we arrived. We were home again—all three snuggling in bed—after another hour and a half. Our disappointment in not actually delivering at home was keen, but we felt right about the way we had all handled the decision to go in and, of course, thankful that all had ended well. It was a continuation of the learning we had done throughout the pregnancy.

Giving birth has always been an awesome learning experience. There is no way one can feel the tiny life growing inside and then pushing its way forth through your body to be nurtured in your arms without coming in touch with a great deal of the universe and one's own soul. But in these days of choices to be made about where and how to have one's child —even *if* to have a child at all—the learning involved can have a particularly profound effect on one's life. It is still possible to hand your body over to a doctor's care—taking whatever vitamins he or she (but usually he) prescribes, and in the end being delivered at a convenient date and time. Yet increasing numbers of us are now choosing to take more active roles in our pregnancies and deliveries and in the process learning what it *really means* to take responsibility for our own health care.

Like so many of the do-it-for-yourself choices, it's not as easy as it sounded at first. I found myself often wishing for the comfortable way out—not that I wanted drugs during my labor. Once I had made the commitment to natural childbirth, that part was relatively easy to stick to. But I often thought longingly of the days when I *trusted* what a doctor told me without question. Having to make all the decisions myself took a lot of time—and a steadfastness I did not always feel.

There are no easy rules of thumb these days. For every person or book who said "limit your salt intake," there was someone admonishing me to be sure I was getting enough—depending on whether they thought retained fluids a hazard or a need. I was cautioned about gaining weight as often as I was told to increase my protein intake to 80-100 grams a day and "get plenty of carbohydrates" (or "stay away from carbohydrates")—"don't worry about how much weight you gain" (or "try not to gain more than 30 pounds"). It was the first time in my life that it really mattered that I did the right thing. It was someone else's health I might be jeopardizing, not just my own. Yet it was totally up to me to decide—I had not entrusted myself to the hands of a doctor, and while my midwife offered suggestions and gave me things to read, she assumed I was responsible enough to make my own decisions.

If I had read just one book I might have thought I was doing things the *right* way. By reading many, I only knew that it was up to me to choose among the many options offered in good faith. It became obvious that there are no right answers, just good ways of doing things. I was forced to listen to my insides. I had to do what *felt* okay, tasted good and resonated with my beliefs. My body became my teacher. It also became truly my own in a way it had never been before—paradoxically, at a time when it often felt it had been taken over by the little creature growing inside. I think I ended up better prepared to take on the responsibility for my child's care than I would have been otherwise, and I took a huge step forward in knowing the real meaning of self-help health care.

The decision of where and how to give birth is another biggie these days that one can't escape. The options range from a traditional hospital delivery to an unattended homebirth, with family-centered hospital birth, birthing center, and midwife- or doctor-attended homebirth falling in between. There are advantages and disadvantages, dangers and delights attached to any of the options. Staph infections in hospitals may be more dangerous than quasi-sterile home conditions, complicated monitoring and emergency equipment may be a blessing or an expensive curse. Being at home may be a joyful spiritual experience or a tragedy. You never know till it's over what you will need. All the willpower and courage in the world may not be able to prevent an emergency Caesarean operation.

The decisions on where and how to give birth must rely on your own sense of the risks involved and the options you have available to you. While we were committed to homebirth as healthy and natural and had an excellent set-up (with the possible exception of our distance from the hospital), we ended up in a standard delivery room—though the lights were dim, Tom gave the Leboyer bath, the baby nursed while I was still on the table, and we went home as soon as we had done all the paperwork. . . . You have to be clear about what you want, but open to necessary changes in plan.

In most communities, how and where is still something of a political decision if you want anything outside the traditional. While times are definitely changing and the medical profession is loosening up, it is still usually a fight to get what you want —whether in the hospital or outside of it. We thought we were incredibly lucky to have easily found a qualified and experienced nurse-midwife in our area—it was just what we wanted. But our timing was such that the hospital she worked with was getting jittery (and feeling the competition) and her own confidence about the importance of her mission was seriously being shaken. We ended up becoming embroiled in the politics of bucking the established medical tradition. In the long run it was worth it because every doctor we talked to was made a little more aware of the positive side of having a baby at home and in the process of reassuring the hospital, our midwife discovered the depth of her support within the community and was thus strengthened herself. A community birth information network was also begun.

But again, there were times when I wondered why I bothered to do things differently than the norm—I chuckled ironically at my vision of a blissful pregnancy knitting booties as I was thrust instead into an activist's role again in order to be able to have the kind of birthday we felt was important. Hopefully our part in the fight made it more possible for others to choose as we did—both in our community and beyond. It brought home to me once again the realization that taking responsibility for one's own actions involves commitment of time and energy—especially if one is trying to break the barriers into new ways of doing things. It's not the easy way of behaving—but it's worth it.

hand & foot courtesy Aubrey Rose-Gero

Resources

In my usual way, I read a number of books both before and during my pregnancy. All were useful in helping me know what to expect, but all got in the way somewhat of my own experience. Some of the things I felt were never mentioned in any of the books I read. The heavy spiritual quality that is almost de rigueur *these days was not particularly a part of our birthing. Of course it was a beautiful, awe-inspiring occasion, but it was also such damn hard work for* all *of us that the moment many wrote about when father and mother look into their newborn's eyes and see the cosmos just didn't happen. We were tired, he was tired, and it was several days before we made any real connection. Even the Leboyer bath wasn't all that big a deal (he belched once and twitched a lot). What I'm saying is, read as much as you want to, but take it all with a grain of salt—and know that your own experiences will be as different as you are from everyone else.*

This is hardly an exhaustive list. I read somewhere that there are now about 30 birth-related books being published each month, *so there's no way to keep up with them all. These are some that I enjoyed.*

***The Birth Primer*, Rebecca Row Parfitt, 1977, $5.95 from:**
Running Press
38 South 19th St.
Philadelphia, PA 19103

This book is a good place to start if you have no idea which of the many options you'd like to choose for the birth of your baby—or would like to go over them in a clear and organized fashion. It includes a good description of labor, covers the different types of natural childbirth methods as well as different drugs available, and discusses the wide variety of birthplaces possible. It also gives extensive, well-annotated references so you can dig more deeply into areas that interest you.

***Immaculate Deception: A New Look at Women & Childbirth in America*, Suzanne Arms, 1975, $6.95 from:**
Bantam Books
666 Fifth Ave.
New York, NY 10019

This book still sums up the case against hospital and doctor-centered childbirth as well as any—and it was one of the first to do so. It is both passionate and

well grounded, the book most highly recommended by my midwife. (Also *A Season to be Born*, 1973, $3.50 from Harper-Colophon Books, 10 East 53rd, New York, NY 10022.) Suzanne's lovely account and her husband's photographs of her first pregnancy is one that centers in well on that feeling you have of being one with all the other women who have ever given birth.

NAPSAC
P.O. Box 1307
Chapel Hill, NC 27504
The National Association of Parents and Professionals for Safe Alternatives in Childbirth put on a conference every year where many of the people most active in homebirth present papers—and each year they publish the proceedings. These books are excellent resources if you want to back up your instinctive feeling in the rightness of homebirth with well-researched facts and opinions based on experience. Check with them for their most current titles and prices.

***A Child Is Born*, Lennart Nilsson, et al., rev. 1977, $5.95 from:**
Dell Publishing Co.
1 Dag Hammarskjold Plaza
New York, NY 10017
Looking at this book made it all seem real. The photographs from the first few weeks after conception are incredible and the text amazing. Did you know that the fetus floats upside down in (and swallows) a bag of urine? Or that the bones begin in the middle of the limbs and then grow outward?

***Preparation for Childbirth*, Donna & Rodger Ewy, 1974, $1.75 from:**
New American Library
1301 Ave. of the Americas
New York, NY 10017

***Husband-Coached Childbirth*, Robert A. Bradley, rev. 1974, $6.95 from:**
Harper & Row
10 East 53rd
New York, NY 10022

***Childbirth Without Fear* (1944, $2.25) and *The Practice of Natural Childbirth*, Grantly Dick-Read, rev. 1970, $1.25 from:**
Harper & Row

These books run the gamut of natural childbirth methods—I read them all and used something from each in my own labor (but then I hate to rely on one method or expert!) All have good suggestions for pregnancy (diet, exercise, etc.) as well. The Bradley is pretty obnoxiously written—full of dated put-downs for women, but it's still worth looking at. The Ewy book is the clear-

est, step-by-step description of the Lamaze method—the one most often taught in preparation classes.

***Caesarean Birth Experience*, Bonnie Donovan, 1978, $4.95 from:**
Beacon Press
25 Beacon St.
Boston, MA 02108
It *could* happen to you, and it's a good idea to know how it works and what your options are. Excellent reading for the second time around C-sections too.

***Birth Without Violence*, Frederick Leboyer, 1975, $3.95 from:**
Alfred A. Knopf
201 E. 50th
New York, NY 10022
No list of birthing resources would be complete without a mention of Leboyer—the man who publicized the idea that birth is painful for the baby too. The ideas of darkness, silence and a warm water bath for the newborn are depicted with lovely photographs. See the film if you can as well. Again, to my mind it's not a rigid method to be followed but an awareness to be maintained. His new book, *Inner Beauty, Inner Light: Yoga for Pregnant Women* (1978, $8.95 from Knopf), looks to be good, though I'm afraid I've only had a chance to glance quickly at a friend's copy.

***Healthy Pregnancy the Yoga Way*, Judi Thompson, 1977, $3.95 from:**
Doubleday
245 Park Ave.
New York, NY 10017

***Prenatal Yoga & Natural Birth*, Jeannine O'Brien Medvin, 1974, $3.50 from:**
Freestone Publishing Co.
P.O. Box 1081
Mendocino, CA 95460
I can't speak highly enough of the positive effects of doing yoga during my pregnancy. I only wish I had been more diligent. These two books were especially helpful in giving me a sense of what I could do. It was encouraging seeing the obviously pregnant authors doing complicated stretches. The first book also has a section on postnatal exercises—quite welcome when you make the sad realization that your swollen belly won't go back down all of its own accord!

***Nursing Your Baby*, Karen Pryor, 1973, $1.95 from:**
Pocket Books
Simon & Schuster
1230 Ave. of the Americas
New York, NY 10020

***The Womanly Art of Breastfeeding*, 1963, $3.95 from:**
La Leche League
9616 Minneapolis Ave.
Franklin Park, IL 60131
If you are planning to breastfeed or even just contemplating it, these are two important books to read in the last months of pregnancy. The La Leche League book is slanted very much towards average middleclass households, while the Pryor is more "modern" in attitude. Both are invaluable resources to be kept by your bed—I often found myself referring to them in the middle of the night, particularly in those first few overwhelming days. LLL has classes and hotlines in most communities as well.

***Spiritual Midwifery*, Ina May Gaskin, rev. 1978, $8.50 from:**
The Farm
156 Drakes Lane
Summertown, TN 38483
My favorite book during my pregnancy. The first half is personal accounts with some wonderful photos of the births at The Farm. The second half is how-to information for parents and midwives. The accounts, each with different insights, add up to an exciting vision of what birth could be at its best and most enlightened. My only caution is that the reality of your birth may not be quite so cosmic. We found ourselves kind of let down when it didn't turn out like an Ina May special. Still, we're

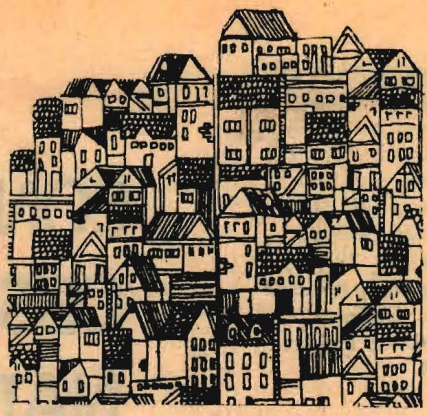
all just learning, and it's a far cry from the "pull 'em out with forceps/slap 'em on the bottom" days.

The Experience of Childbirth, Sheila Kitzinger, 1972, $2.95 from:
Penguin Books
72 Fifth Ave.
New York, NY 10011

Naturebirth—You, Your Baby and Your Body, Danae Brook, 1976, $3.95 from:
Pantheon Books
201 East 50th
New York, NY 10022

Pregnancy After 30 Workbook, Gail Sforza Brewer, 1978, $8.95 from:
Rodale Press
33 East Minor
Emmaus, PA 18049
I didn't read this till after Skye was born, but I wish I'd read it first. It's an excellent, excellent primer that is useful for anyone, not just the "elderly primapara" (as the medical profession terms anyone having a first child past age 30). It is chock full of information on what happens in your body and the baby's and how to deal with it. Especially good sections on nutrition and post-natal feelings/problems—an area so many of the books leave out entirely as if the birth were an ending rather than a beginning.

Birth Book, Raven Lang, 1972, $6 from:
Genesis Press
P.O. Box 11457
Palo Alto, CA 94306
This was the first book I read on home-birth years ago, the pictures and stories giving me a sense of what birth was really like. It feels a little on the hippie side now (full of accounts of births under redwood trees and in tipis), but it was a pioneer when it first came out. And so was the Santa Cruz Birth Center—some of the earliest lay midwives to operate openly in the present resurgence of a time-honored skill.



COMMUNITY

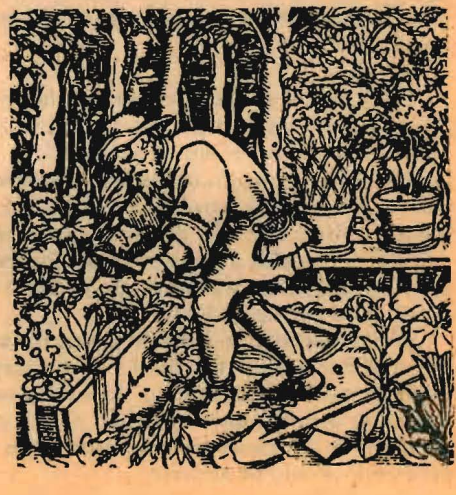
Community Technology, Karl Hess, 1979, 107 pp., $2.95 from:
Harper & Row, Publishers, Inc.
10 E. 53rd St.
New York, NY 10022
More and more neighborhoods are starting to act at times other than crises. Communities are organizing around positive goals to create the type of place they want to live. Karl Hess, in *Community Technology*, outlines the possibilities when people participate in everything from neighborhood energy and food production to weekly town meetings and local newsletters. Drawing upon his experiences in an urban D.C. neighborhood and a rural West Virginia town, Hess constantly urges us to take more responsibility for our lives and community. The ideas, many of which were expressed before in *Neighborhood Power*, are worth repeating. —PC

Fallen Arches
No Mac Committee
Vineyard Haven, MA 02568
Citizens' groups around the country working to keep fast food franchises out of their neighborhoods have taken heart over the round one victory against the Big Mac on Martha's Vineyard, where the health board rejected McDonald's proposed site on January 2. Information from *Big Mac—The Unauthorized Story of McDonald's*, by Max Boas and Steve Chain, 1976, from E. P. Dutton (currently out of print but available through libraries); an independent study of the quality of fast foods by the Nutrition Institute of America published in the April 1977 issue of *Caveat Emptor*, 620 Freeman St., Orange, NJ 07050; and the economic study by the Institute for Local Self-Reliance, 1717 28th St. N.W., Washington, DC 20009, were especially helpful in making the community aware of the negative impacts of franchise fast foods. For more details, see the February and March 1979 Earthwatch section of *New Age Journal*, 32 Station St., Brookline, MA 02147. —TB

PLACE

The Willamette Valley, William Bowen, 1978, 120 pp., $17.50 hardcover from:
University of Washington Press
Seattle, WA 98105
11,873 white settlers lived in the Willamette Valley of Oregon in 1850. The settlement patterns of these people plus such facts as place of origin, age, sex, kinship, crops, livestock are detailed in a series of maps contained in *The Willamette Valley*. These maps, along with a text that includes fascinating excerpts from diaries, letters and private papers of the settlers, reconstruct the lifestyle of 1850 Oregon with insights into the motivation and interactions of its inhabitants. And what were the people like? Well, one federal appointee to the Oregon Territorial Courts noted, ". . . They were a very honest class . . . and not very fond of work. . . . They cared very little about luxuries; were very independent, and their lives were generally very good." A solid book for understanding the common frontier experience without the usual romanticizing —PC

Native People and Nukes
The Skagit System Cooperative was formed in 1976 by members of three Indian tribes to protect their traditional fishing places. The Skagit, one of the key rivers within the tribe's fishing management area, is facing a future which includes plans for constructing twin nuclear reactors and two dams. The cooperative was recently granted intervenor status for the Nuclear Regulatory Commission hearings. Additional information is available from:
Andy Fernando
Skagit System Cooperative
Box 368, Reservation Rd.
La Conner, WA 98257
—PC



Last issue, Phil introduced us to some of the magic tricks he has observed convection air currents performing in passive solar houses and how their understanding opens up a whole new territory of passive solar design. Here he lays out some how-to principles and techniques for seeing how your own house operates. Soon we may find cadres bearing lighted incense sticks tracking down everywhere the elusive invisible airs of comfort and distress. This paper is in "ISES '78", a collection of papers from last year's gathering due to be released this month. Contact AS of ISES, c/o American Technical University, P.O. Box 1416, Killeen, TX 76541. Phil can be contacted at Box 18123, Denver, CO 80218. —TB

CONVECTION OBSERVATION FOR NATURAL CLIMATE DESIGN

by Philip Henshaw

Convection, or thermal air motion, is a rich cyclic behavior and a delicate measure of house climate. While not simple, convection is very orderly and readily observable using simple tools.

Pursuit of house climate understanding involves some largely unorthodox procedures. The heart of my study technique involves the intensive personal observation of single 34-hour periods. My equipment includes a 24-channel chart recorder, lots of thermocouples, half a dozen 'hot wire' anemometers, a couple of pyronometers, and then, very importantly, incense sticks and a refined attention to skin sensation. Smoke trails have become my best scientific tool.

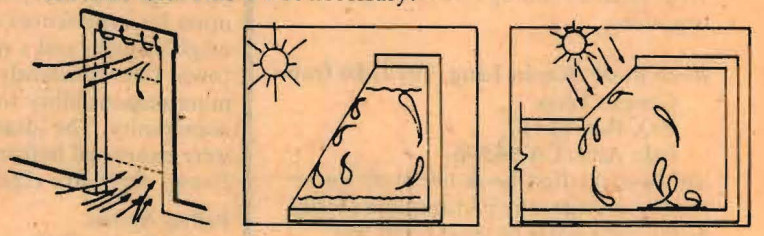
The Importance of Air Flow

Convection is a large heat mover and a very delicate indicator of the balance of remote surface temperatures, building geometries, material properties and outside influences. The complex path of a unit of energy into and then out of a home usually includes travel by means of natural air circulation. The thermal action, of solar homes especially, involves repeated internal energy flows between different parts. These radiant, conductive and convective flows are only readily observable by studying convection.

The scales of convection links in the energy flow path can be seen in the following normal case calculation: Through an open doorway to a room, in any house in winter, there might well be found a two-foot-deep cool air stream at the bottom, and its counterpart warm air stream at the top. A normal temperature difference of 3 degrees F. and a normal flow rate of 2 ft. per sec. yields a one-way mass flow rate of 3000 lb. of air per hour, and a heat flow rate of 2200 BTU per hour. That is 400 BTU per sq. ft. hour!

If one observed that this flow was the average of the day, one might conclude that the 15 cents a day in energy flow might be saved by closing the door. However, because in each situation, with the door open and with it closed, different energy flow dynamics are established, it is not likely that your prediction would be accurate.

In the case of convection on a direct gain mass wall, a significant fraction, say a third, of the incident light energy is immediately carried off by convection. At night a similar fraction of the 'stored' energy is carried off the same surface by convection. It is important to truly understand where this energy goes. Quite often both these day and night currents directly supply the cold window down drafts, thus exaggerating the heat loss. This is not necessary.



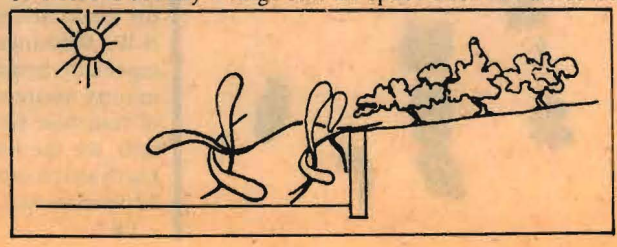
Principles of Order

With convection being such a large volume business, one would perhaps expect, but does not usually find, a large amount of turbulence. Convection is a startlingly orderly process. The natural response cycles generate discrete air currents which deftly avoid disturbing each other's paths. When one does block another's path, the other usually waits until the one is finished. The following are seven principles of order which seem to be in operation for thermal air currents.

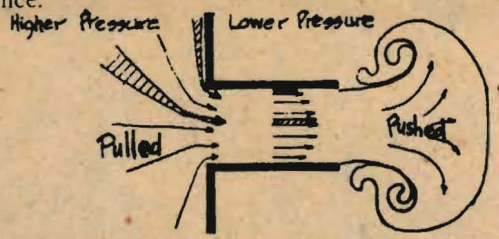
1. Because thermal air currents are the interaction of fluids of different temperature and density, they don't mix well.

2. Thermal air currents often slide along effortlessly, within very sharply defined mid-air boundaries. I am a bit suspicious of how a low friction boundary surface can exist in mid-air, but I've observed them time and again. The magic of friction-less boundaries between currents seems to be that the air at the boundary is not in motion.

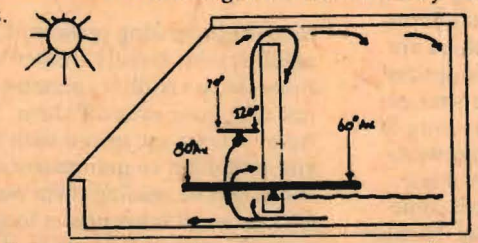
3. There is usually a large still air space between air-currents.



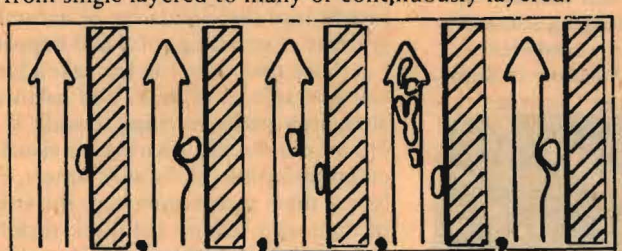
4. The type of boundary and current form depends heavily upon whether it is a 'pushing' current or being 'pulled' from a distance.



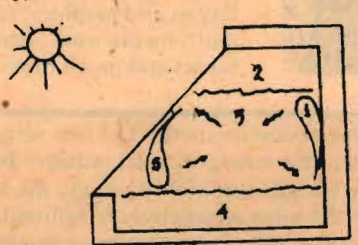
5. All air currents are both locally and distantly determined. For example, the average temperature difference between two rooms *may* determine the amount of air flow, but which of the available currents will be exchanged is determined by other interactions.



6. The observable uniformity of many currents, both large and small, is often of a uniform velocity and direction rather than temperature. Currents act like tracks for parcels of air of different temp.-density. Parcels of cooler air, moving in a current across a warm wall, for example, exchange momentum with still parcels of warmer air adjacent to the wall. This exchange takes place in a very wide range of times from very quick to a second. This still air layer I call a voluntary air layer. The small parcels of warm air introduced to the stream path mix with each other as the cooler parcels are deposited into the voluntary layer for warming. This completes a direct current to current grafting in a continuous stream. The voluntary layer ranges in thickness from very thin to feet thick and from single layered to many or continuously layered.



7. Every major air current is a member of a five-part life cycle: the rising current, the top reservoir, the falling current, the bottom reservoir and the quiet air within which the others adjust themselves. One of the tools of climate design is to arrange materials in such a way as to eliminate certain reservoirs by creating direct current-to-current linkages as described in number 6.



Convection Observation Technique

The use of incense smoke to visualize climate dynamics is a very powerful tool if benefited by a little expertise and an informed intuition. I can't convey any amount of informed intuition; that is always something you make for yourself. The following suggestions might help a bit with the expertise.

1. Carefully watch the difference between smoke rising from its own heat and smoke which has cooled and is passively following an air current. Learn how to shake off a bit of smoke to leave it hanging. Smoke often lies *between* currents, not necessarily in them. Smoke has a sketchy visual appearance, whereas the currents are always volumes. Look for what the smoke can tell you about what you can't see.

2. Wait five seconds after your own movements and five minutes after changing openings so that the natural motions may establish themselves. Stand at the side of where you expect to find a current. Notice that floor currents will often part and rejoin in passing around your legs without apparent disturbance. Note the air between currents which doesn't move.

3. Scan across openings. Draw a horizontal line of smoke across an open doorway and watch how the line bends. Scan vertically across an open doorway by starting at the bottom and raising the smoke source at the same rate which the smoke is rising from its own heat.

4. Look especially for currents near floors, walls and ceilings. Note the difference between deep slow currents and thin fast ones.

5. Scan across a current in several places from its origin to its destination. Notice if the edge is sharply defined or not.

6. Expect current patterns to change on second, minute, hour, day and season time scales.

7. Check out a room with a fireplace and check out a stairwell.

8. Measure the temperature, speed and area of opposing sides of currents (top and bottom of doors). Heat content of air is in the neighborhood of .02 BTU per cu. ft. per degree F.

9. Look for gurgling type action of air as it 'bubbles' through warmer or cooler bodies, which results from crossed flows or inversions. All pockets tend to be visited by intermittent puffs or currents. Note what geometries constitute a pocket.

10. Try to find the difference between 'push' and 'pull' currents, how a push current tends to billow out at a point and how a pull current can leave 'cracks' in the main air mass for very discrete air currents to slip into.

Then there are some suggestions for your mental process for making the observations really meaningful.

1. Develop your understanding of the basics of physics: density, momentum, balance, bounce, etc.

2. Try to develop an awareness and a habit of viewing whole cycles: ones of the moment, the day, the year, seed-organism-seed, idea-thought-idea, etc.

3. Look for what never changes as a basis for understanding and responding to what does.

4. Ask questions, develop and then refine uncertainty, draw few if any conclusions. Value uncertainty.

5. Don't expect any of the above 14 comments to be very meaningful until after you're a good observer.

Design with Air Currents

The above discussion has stemmed from my delight with the intricate order and beauty of things. This is not sufficient to make things work, though it may be one of the essential factors in letting things work. One of the basic problems in design is that it is hard enough to relate pencil lines to building materials which are visible and expected to stay put. Relating pencil lines to invisible things which change continuously is another matter entirely. While difficult to recognize, I think there is an inherent difference between arbitrary wiggling and genuinely thoughtful guesses. One of the differences is that natural air flow tends to be a sequence of straight lines and non-circular curves. All curves should contain a sense of elasticity. Drawings of air currents will often have crossing paths and use the same path for intermittent currents in different directions. In the last analysis, however, a well informed imagination is the only good key.

Plant Ecology Wallcharts from the British Museum (Natural History), Barbara Nicholson, 15 annotated 24" x 31" color posters, $6.00 each plus postage, for descriptive brochure write:
United Communications
Box 320
Woodmere, NY 11598

Nature Through the Seasons, Richard Adams and Max Hooper, color illustrations by David A. Goddard and Adrian Williams, 1976, 108 pp., $4.95 from:
Penguin Books
625 Madison Ave.
New York, NY 10022

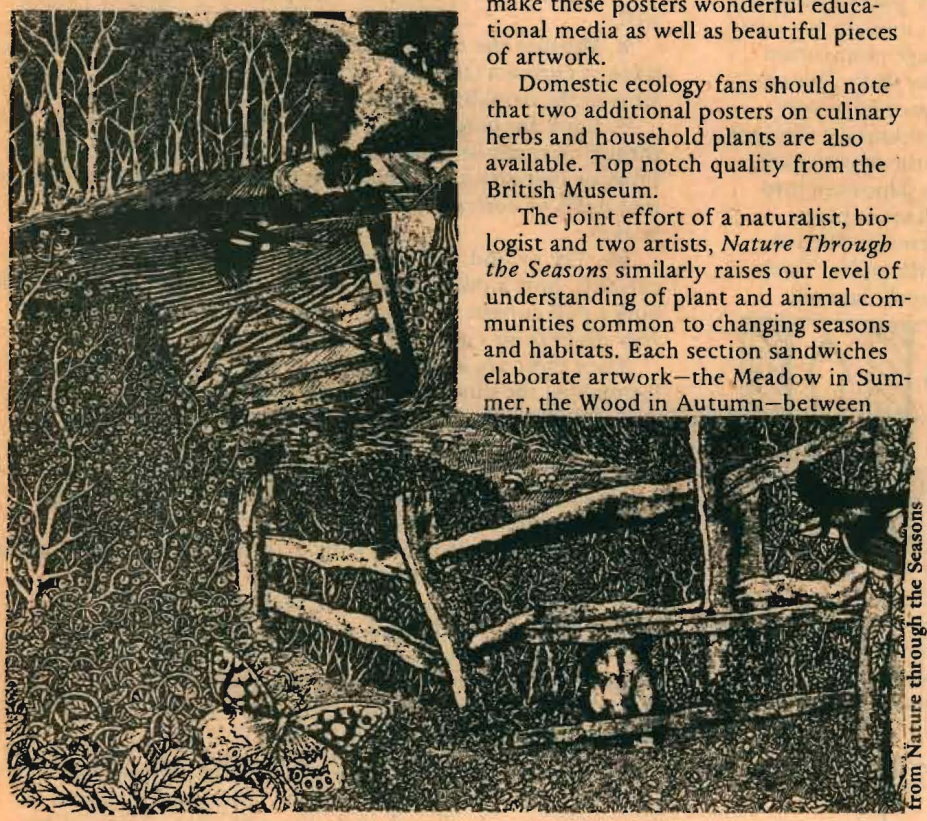
Here are two popular ecology items from Britain which underscore the seasoned genius of these island people to understand and delight in their countryside—its somewhat limited but rich storehouse of ecological treasures. Theirs is an appreciation of nature well worth learning from:

from Nature through the Seasons

Chances are you may already have seen one of Barbara Nicholson's *Plant Ecology Wallcharts*; actually there are 15 of these finely detailed composites of plant life in Britain. Each poster explores a distinct botanic community in its natural habitat, from hedgerows to Scottish pine forest to heather moorlands. Most of the habitats have some North American equivalent. Ms. Nicholson's eye for scientific accuracy and her subtle progressions of season and scale make these posters wonderful educational media as well as beautiful pieces of artwork.

Domestic ecology fans should note that two additional posters on culinary herbs and household plants are also available. Top notch quality from the British Museum.

The joint effort of a naturalist, biologist and two artists, *Nature Through the Seasons* similarly raises our level of understanding of plant and animal communities common to changing seasons and habitats. Each section sandwiches elaborate artwork—the Meadow in Summer, the Wood in Autumn—between thought-provoking prose and ecological explorations. David Goddard's illustrations are so vividly expressive you cannot take your eyes off them. Richard Adams' texts are spiced with folklore and ramblings so quintessentially English you'll be reading them out loud. In all, this small book goes a long way in giving human expression to that "unquestioning acceptance of life which is shown by birds and animals themselves." Very special. —SA



from Nature through the Seasons

Joe Liles/Celebration Graphics
1116-B Ninth St.
Durham, NC 27505

I wasn't there when Joe Liles previewed his mind-opening slide show *Radial Symmetry*, to faculty and students at the University of Michigan's School of Natural Resources. But for years that linear institution buzzed with his visual insight into the circularity of natural systems. Something *good* had happened. . . . Since that time Joe has taken his acute awareness of detail and balance along new paths, learning to walk in "moccasin tracks," sharing his visual communications skills with others, catalyzing them to communicate the strength of their own visions. His work with Native American people and themes has been particularly fine, whether at Red School House in St. Paul, Minnesota, or in his current series of coloring books and readers on Ojibway history. Now in North Carolina, Joe is freelancing his art/change work—doing illustrations, layout and graphics, screen printing, multi-media work, hand-lettering of books and much more. "I keep harbor-

cont.

G. Moore estimated that the economic cost of ICC interference was $3.6-6.9 billion in 1971, and obviously it is even higher today. About one-quarter of the income generated in transportation is simply wasted (and we all help pay to keep those empty trucks and idle box cars profitable). As George Hilton notes, the transportation industry "attracts unspecialized resources from other activities and wastes them in idleness, underutilization and inappropriate uses."

We can now see the reasons for the railroads' decline, and they have nothing to do with alleged highway subsidies. The ICC's value-of-service method of rate setting has become unworkable in the transportation industry because those shippers who have the greatest ability to pay, the high-value industries, also have the most alternatives to railroad transportation. At the same time, the excess that must be charged these high-value shippers has gotten larger and larger as the railroads have acquired an increasing burden of nonprofitable services, such as rail-passenger, low-density spur line, and small-lot traffic. Meanwhile, prices of the bulk, low-value goods could be increased because of the political power associated with these commodities (farmers and mineral interests), and because shipping costs affect demand in these commodities so much more. Thus, over time, the railroads became burdened with

ing in my mind that I might be able to leave something to generations that follow me . . . using art as an educative and inspiring force to make people's lives fuller and more meaningful. . . ." If you'd ever seen any of Joe's work—like the multi-media presentation on old train stations—you'd know how close he's come. (Thanks to Joe and H.T.A.) —SA

***Green Magic*, by Lesley Gordon, Viking Press, New York, 200 pp., $14.95**

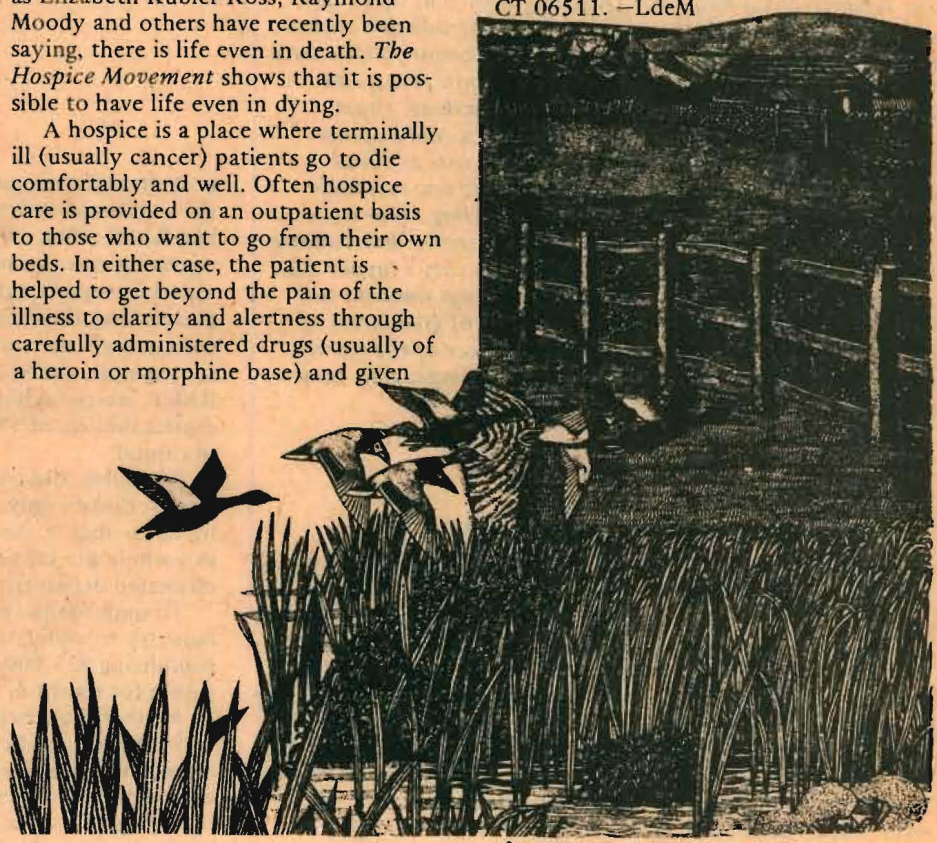
I'm sure Flora, the Roman goddess of blossoming plants, would agree with me that this book really articulates the magic of spring . Its chapters are a garland of legends and lore in the most magically esoteric sense, complemented with lovely quotes and pictures. There are such intrigues as plant fantasy, witchcraft and wildflowers, plants and planets and plant deities. The standard approaches to herbs and flowers are examined, such as remembered perfumes and floral calendars, but Lesley Gordon's main emphasis is abundantly symbolic—as the energy of spring itself. You might just throw your culinary medicinal and cosmetic garden to the wind and sow a magic garden this year after you read this lovely touch of "Green Magic." The sentiments these flowers represent may well sum up this wonderful book: yellow jasmine—grace and elegance; belladonna—imagination; and ranunculus—you are radiant with charms. —NSZ

***The Hospice Movement*, Sandol Stoddard, 1978, $2.50 from:**
Vintage Books
Random House
201 East 50th
New York, NY 10022

It was strange reading about dying in the weeks just before our baby was born—the fullness of the life within me seeming to bely the grimness of death as our culture perceives it. Yet death and birth are all parts of the same full circle, and as Elizabeth Kubler-Ross, Raymond Moody and others have recently been saying, there is life even in death. *The Hospice Movement* shows that it is possible to have life even in dying.

A hospice is a place where terminally ill (usually cancer) patients go to die comfortably and well. Often hospice care is provided on an outpatient basis to those who want to go from their own beds. In either case, the patient is helped to get beyond the pain of the illness to clarity and alertness through carefully administered drugs (usually of a heroin or morphine base) and given the emotional support necessary to die consciously. Families and friends, even pets, are an integral part of the process. The movement started in England and has spread throughout the U.S.—many communities now have at least fledgling out-patient services.

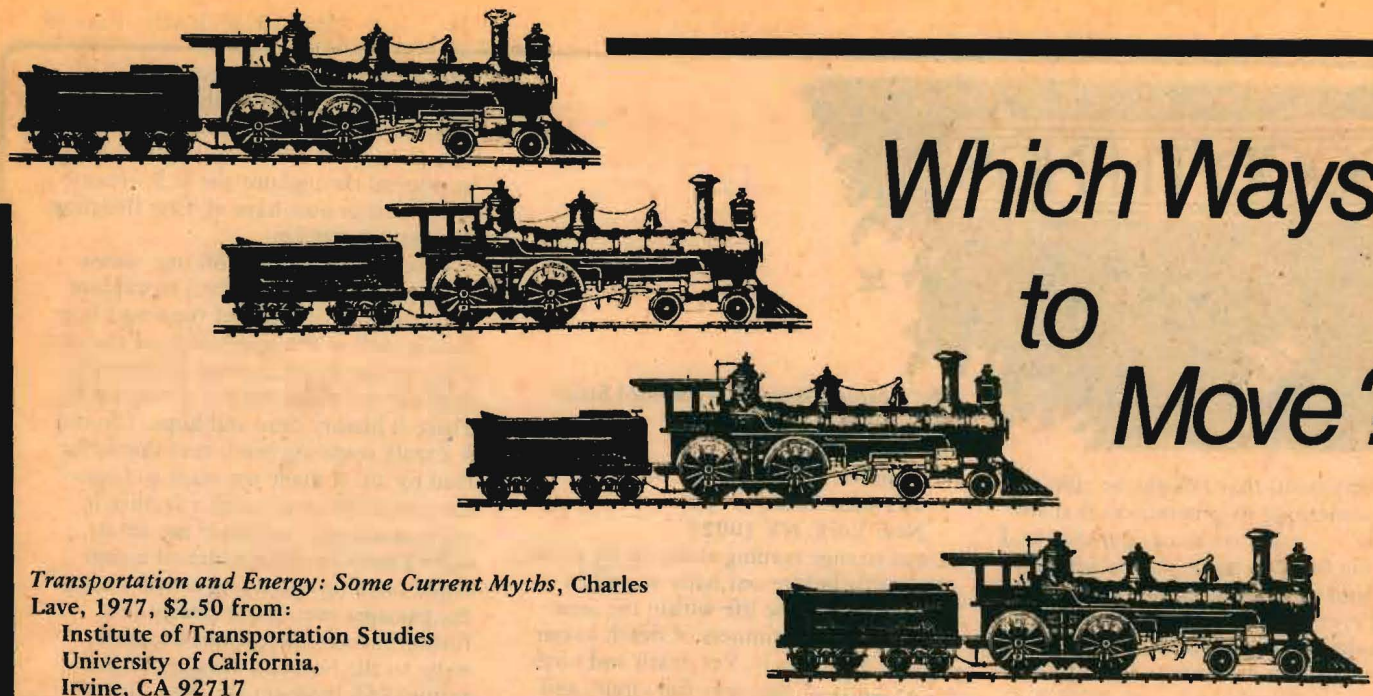
The book is a beautiful one—sensitively and carefully written to explore both the practicalities of running a hospice as well as the spirituality of the care given to the dying. Several of the early ones are described here in loving detail. There is history here and hope. I found it a truly inspiring book that should be read by all. It made me want to begin the groundwork for such a facility in our community and made me think again about Tom's old idea of a combined birthing and dying center to link the passages even more clearly. For further information about hospices, write to the National Hospice Organization, 765 Prospect St., New Haven, CT 06511. —LdeM



from Nature through the Seasons

many unprofitable services and could not raise tariffs on the bulk commodities; every time they raised tariffs on the high-value commodities they drove more and more of that business away.

Since the conventional wisdom is that the decline of the railroads is due to highway subsidies, we now have proposals in Congress to give "compensating" subsidies to the railroads, either to upgrade their track or to provide them with new rolling stock. But if the above analysis is correct, such grants will have little effect on the economic viability of the railroads. After all, the railroads were losing business back when they still had a sound physical plant and before significant federal expenditures on highways. Likewise, all the current proposals to allow railroads to abandon unprofitable services and reduce track mileage could not really do much. They would increase the short-term profitability of the railroads; but if ICC interference is allowed to continue, freight will continue to be lost to trucks regardless of increased railroad profitability, and the enormous waste of resources in all modes will continue. Hence the most effective federal policy for achieving better allocation of transportation resources, reduced energy use, and increased railroad profitability would actually involve no cost to the government. All we have to do is get the government out of the regulation business.



Which Ways to Move?

Transportation and Energy: Some Current Myths, Charles Lave, 1977, $2.50 from:
Institute of Transportation Studies
University of California,
Irvine, CA 92717

Jay Baldwin at Co-Evolution Quarterly *turned us on to this eye-opening paper which contributes a lot of valuable critical thinking to mass transit advocacy. Some excerpts follow. Lave brings a lot more of transportation reality into focus, and response to this paper is generating fresh thinking. Great quandaries—change in ICC regulations that would improve energy efficiency would also lower freight costs and lead to more centralization. (It also would eliminate raw materials freight subsidies that hamper material recycling.) Our cities sprawl too much to support mass transit systems—but building them anyhow leads to greater density in the city's layout that is more favorable to mass transit. It also brings rampant real estate speculation and needless destruction of great areas of existing buildings. So goes change. A big piece of the answer still lies in eliminating need for, rather than improving, transportation. —TB*

Myth 4:
"Public transportation is more economical than cars"

These findings are the most depressing of any discussed here, for they imply that transit's costs are so high as to make it unlikely that transit has any significant future. Transit is simply much more expensive than our intuitive estimates would indicate: on the average, transit costs about two-thirds *more* per passenger-mile than the private automobile (including all capital and operating costs for the car), but to be attractive to patrons it must charge them less than they would spend by car. That is, transit services are far more expensive to produce than car services, but they earn much less money. The end result has to be enormous deficits: in 1975 the total deficit for transit in the United States was $1.7 billion, and that deficit has been increasing at an average rate of 59 percent per year since 1968.

Why are transit costs so high? Labor is the major expense (80 percent of total costs) in transit systems; transit unions are in a monopoly position with regard to a vital service, and the normal discipline of the market is vitiated by the willingness of UMTA to provide the necessary subsidies. For example, bus drivers in San Francisco recently rejected, as too small, a pay package that averaged $25,000 per year.

These high labor costs lead to a high unit cost for providing the service. The marginal operating cost of the major rail transit systems (even treating capital costs as sunk, and hence free) is about ten cents per passenger-mile; and this is true for both the traditional systems like New York and the modern systems like BART. (Since BART was designed to minimize marginal operating cost through substitution of capital for labor, this is especially significant.) That is, their marginal costs are actually greater than those for the automobile. If we include capital costs as well, the comparison becomes even more surprising—for example, the $12.00 average subsidy of a round trip on BART, which includes an operating subsidy of $2.62 and a capital subsidy of $9.44, assuming 7 percent opportunity cost of capital.

Of course, these high unit operating costs imply high deficits. In Boston only 25 percent of transit expenses are covered by fares—that is, there is a 75 percent subsidy. In California as a whole the subsidy is about 60 percent. In New York, the estimated deficit for 1976-77 was about $350 million.

To understand the economics of public transportation, one must try to understand why we have $10,000/year taxpayers subsidizing $25,000/year bus drivers. It is difficult to see much future for transit in the face of numbers like these.

Furthermore, expansion will not, as some have predicted, make transit significantly more efficient. Economies of scale are possible in rail transit, but rail systems are feasible in only a few cities, and even when they are designed for minimum operating cost, as in San Francisco, their marginal costs are still too high to be covered by fares. Bus systems are the most flexible, the easiest to expand, and would be the best hope for increasing transit service in most cities, but there are no economies of scale in the provision of bus service.

In summary, transit's current share of travel is only 2.5 percent, but transit requires a subsidy of $1.7 billion to accommodate even the tiny number of people it serves. The unit cost of providing transit services is already too high, and it cannot be reduced. This cost structure has grim implications for the future of transit. At best, taxpayers may agree to meet the increasing cost of maintaining the current level of service; expansion to accommodate a significant amount of urban travel seems highly unlikely.

Myth 5:
"The decline of the railroads is due to federal subsidies of the trucking industry."

Seventy-five years ago railroads carried all the overland freight in the United States; today they carry only 38 percent of it. One of the most widely believed explanations for this decline holds that trucks have been able to win a disproportionate share of the freight because their rates are artificially low: railroads must pay for their own roadbeds, but trucks have the use of a cheap roadway provided by federal highway subsidies.

Is there such a trucking subsidy? One of the earliest academic studies of this question concluded that trucks in general pay about as much in taxes as they incur in highway building costs. The railroads have, of course, maintained that is not true: the United States Railroad Association (USRA) estimates that a diesel semi-trailer of five or more axles actually causes highway costs of about 1.6 cents per mile more than the taxes it pays. USRA admits that the magnitude of the figure is subject to some controversy, but I will use it for the moment anyway. Is 1.6 cents per mile an important subsidy? Using a conservative estimate of $1.40 revenue per truck-mile, the subsidy amounts to only 1.1 percent of truck tariffs. It is difficult to see how an alleged 1.1 percent price subsidy could cause a diversion of freight from railroads to trucks.

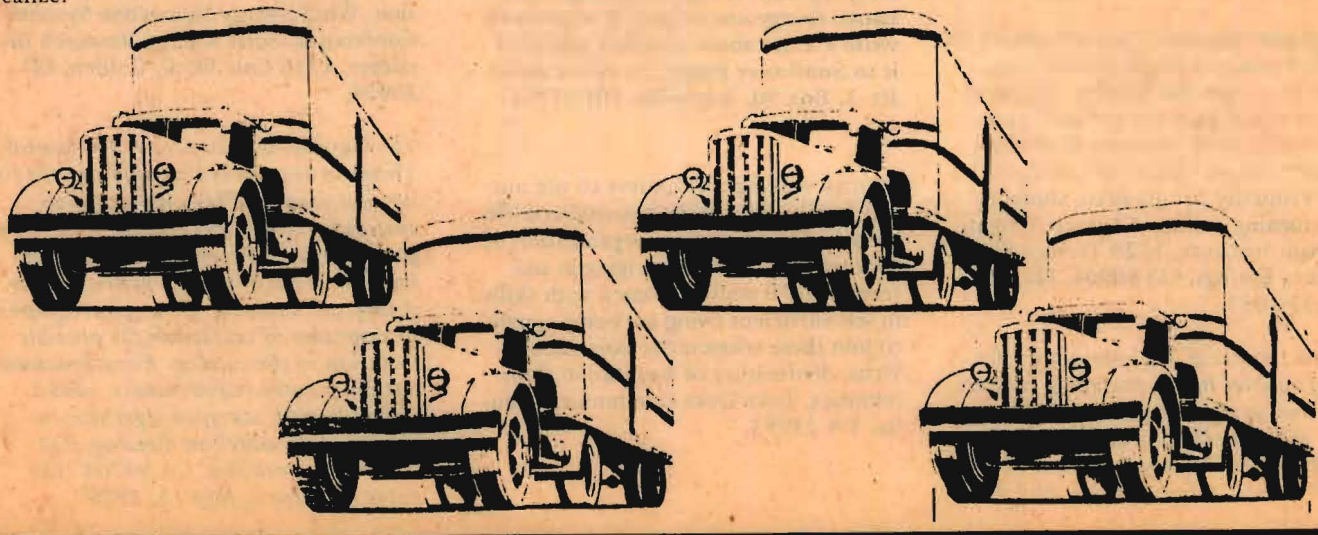
If trucking is not receiving a significant subsidy, and hence charging artificially low prices, what does explain the diversion of freight from railroads to trucks? The first thing to notice here is that the decline of the railroad freight business began long before there was any significant federal highway program, and we need look no farther than the method of pricing freight to see why this happened. In the early years of railroading, freight tariffs were set on the value-of-service principle: shippers of expensive manufactured goods could afford to pay high tariffs, so the railroads charged them high tariffs; shippers of inexpensive bulk goods could afford only low tariffs, so their fees were set low. In essence, the railroads based their rates on the value of the service to the shipper—i.e., the shipper's ability to pay—rather than on the cost of moving the goods. So a manufacturer paid much more for a ton-mile of service than a farmer and provided a greater share of the railroad's profits. When the U.S. Interstate Commerce Commission (ICC) was created, it institutionalized this value-of-service concept. During the years when railroads were the only source of transportation, the relative exploitation of manufacturers worked to the advantage of the railroads. But this gap between the cost of providing freight service and its sale price was also a tempting opportunity waiting to be exploited by some new form of shipping—which the trucking industry was the first to realize.

Even though it cost trucks more than it cost railroads to move a ton-mile of freight, the truck's costs were still lower than the artificially high prices charged manufacturers by the railroads. Trucks could provide better service—faster delivery with greater flexibility—at the same price as the railroads. Thus, to compensate for the relative difference in the quality of services, the ICC regulations that had once worked to the advantage of the railroads now prevented them from lowering their tariffs in order to charge lower rates than trucks. Naturally, the trucking industry prospered and grew, and as a "reward" for its dynamic economic behavior it was eventually placed under the control of the ICC.

Once the trucking industry was under ICC regulation it, in turn, became vulnerable to simple competition. Ironically, the same ICC regulation that previously had helped the trucking industry then provided the profit opportunity encouraging private, nonregulated trucks. Under the ICC regulation, the common-carrier trucks had the same value-of-service pricing as the railroads; thus they also were overcharging high-value goods. It was not long before some manufacturers made the simple calculations to discover that they could operate their own trucking fleets for less money than the artificially high tariffs they were paying the common-carrier trucks—even though their private trucks generally had to return home empty. So private trucking prospered and now accounts for 56 percent of the intercity truck freight.

Unfortunately, the ICC was not content to limit its interference to tariff schedules, but also began making direct allocations of freight runs. Thus, for example, it licensed a particular common-carrier to haul one commodity, frozen hush puppies, between a few specific cities: no other commodity, no other cities. A truck could not pick up additional cargo as it dropped off part-loads on its outbound trip, and on the way back it returned empty. Obviously such practices were inefficient and cost the freight companies money, but the ICC was not bothered by inefficiency (only by competition, apparently). The ICC simply allowed the freight companies to raise prices so that they could survive despite their inefficient use of resources. Thus everyone pays higher freight prices to satisfy the ICC's goal that these empty trucks be kept profitable. A number of economists have estimated that the net effect of ICC regulation is an enormous underutilization of capacity: only about half of the total capacity of all railroads, common-carrier trucks, and private trucks is being utilized.

A great deal of evidence suggests that inefficient use of transportation resources, due to ICC regulation, is the major problem faced by the freight sector of the American transportation industry. These regulations cause a complex web of cross-subsidization that misallocates traffic across modes and produces underutilization of capacity within modes. Thomas



RUSH

The California Office of Appropriate Technology has the following employment positions available:

Community Assistance Group Manager, $1665/mo., 4 yrs. experience in community development and administration.

Community Development Specialist, half-time job sharing, $780-$937/mo., 4 yrs. experience community economic development and appropriate technology.

OAT Design Groups, $1665-$2095/mo.; Mechanical Engineer, masters in related engineering, consultant for field design wind, biomass, waste heat, solar; economist, familiar with energy economics, lifecycling; Wind Energy Specialists, electrical engineering background, will develop demonstration wind generators and do an informational handbook.

Applicants should submit resume to Office of Planning and Research, Dept. R., P.O. Box 160724, Sacramento, CA, 98816, by May 4. Those most qualified will be contacted for interview by May 14.

On May 25-27, a Small Hydro Power Conference will be held in Freeland, Maryland. The conference will cover hydro-land survey, site potential, construction problems, cost appraisal, government regulations, and DOE grants. Equipment demonstrations will include a pelton wheel, a banki turbine and a local existing 30-year site. The $50 cost for the weekend includes food and rustic accommodations. Contact: C. Edwards, Heathcote Centre, 21300 Heathcote Rd., Freeland, MD 21053.

The Wright-Ingraham Institute offers for the sixth summer an innovative core course in Integrative Studies. The nine-week course is an intensive field program dealing with natural and human-built systems and their interrelationships. Primarily for graduate students and returning seniors. Contact: Wright-Ingraham Institute, 1228 Terrace Rd., Colorado Springs, CO 80904. Phone 303/633-7011.

"Inherit the Earth"—a community festival of simpler living, featuring exhibits and shows in gardening, conservation, foods, crafts and transportation. To be held May 12 at Trinity Lutheran Church, 589 W. Powell, Gresham, OR, 667-4927.

In response to the large turnout last year, our friend Bill Caddell of the Frankfort Indiana Community Public Library has organized another energy workshop to be held on May 12th. The workshop will feature David Wright, Harry Thomason, Edward Mazria, and Bill Yanda, as well as group discussions and presentations by local architects. Registration fee is $12. Contact: Bill Caddell, Frankfort Community Public Library, 208 West Clinton St., Frankfort, fort, IN 46041. 317-654-8746.

from Green Magic

Sunflower Farm is a cooperative community with 7 families and 100 hilltop acres in southeast Ohio. Each family owns a 5-acre homesite and shares a 50-acre commons. A Basic Skills/Appropriate Technology School is being organized. Several more members with teaching skills in aquaculture and alternative energy are needed. If interested, write a letter about yourself and send it to Sunflower Farm, c/o Bruce Sabel, Rt. 1, Box 90, Amesville, OH 45711.

Women seeking alternatives to the nuclear family and compartmentalized life are asked to contact an organization of six rural communities ranging in size from 8 to 70 adults. Women with skills in self-sufficient living are being sought to join these cooperative communites. Write: Federation of Egalitarian Communities, Twin Oaks Community, Louisa, VA 23093.

RUSH

The Silver Jubilee of the International Solar Energy Society will be held at the Georgia World Congress Center in Atlanta, May 28-June 1. A technical program covering a broad range of solar topics will be offered by solar experts from around the world. Exhibits of hardware and construction techniques will also be on view. Contact: 1979 International Congress of ISES, Engineering Experiment Station, Georgia Institute of Technology, Atlanta, GA 30332.

The War Resistors League Organizers' Training Program for summer will be held on June 16 and August 11. This program provides training for community organizers, and peace and anti-nuclear activists. Content includes Gandhian non-violence, feminism, socialism and anarchism. Limited to 20 participants, the program lasts 2 weeks and costs $85 (including food and housing). For a brochure, contact: War Resistors League, 339 Lafayette St., New York, NY 10012.

The Wind Energy Innovative Systems Conference, sponsored by the U.S. Dept. of Energy, will be held on May 23-25 at the Four Seasons Motor Inn, Colorado Springs, CO. The registration fee is $40 and includes 2 luncheons, a banquet and a copy of the proceedings. During the two-day conference, speakers will discuss their federally funded innovative wind energy projects. Topics include: Darrieus turbines, vortex augmentors, sail wings, electrofluid dynamic generators, gyromills, and more. For information: Wind Energy Innovative Systems Conference, Solar Energy Research Institute, 1536 Cole Blvd., Golden, CO 80401.

The Goodfellow Catalog of Wonderful Things *is now accepting applications for its next edition. This catalog allows customers to purchase directly from its participating artisans. No fees or commissions are required for participation. A jury will evaluate slides, photographs or examples of craftwork for possible inclusion in the catalog. For a brochure outlining entry requirements, send a self-addressed, stamped legal size envelope to: Goodfellow Catalog, P.O. Box 4520, Berkeley, CA 94704. The entry deadline is July 15, 1979.*

STEPPING STONES:
APPROPRIATE TECHNOLOGY AND BEYOND

Edited by Lane deMoll and Gigi Coe

208 pp., 1978, $7.95

The philosophical strands of thought from which a new social vision is being woven . . . *Stepping Stones* brings together in one place many of the classic essays that have given rise to the appropriate technology movement. From E.F. Schumacher, Wendell Berry and Margaret Mead, to John Todd, David Morris and Amory Lovins, to *RAIN*'s own Tom Bender and Lee Johnson, *Stepping Stones* will move you beyond the era of limitations into the era of changing possibilities. Five new pieces help bridge the gap between new technologies and new values, bringing greater clarity to our vision of a humanly scaled society. This companion to *Rainbook* is the perfect reader to bring you full circle to where we stand today: holding in our hands the makings of a new world.

STEPPING STONES POSTER

Diane Schatz

21"x24", 1978, $3.00

Spinning images that excite the imagination, Diane Schatz's latest artwork for *RAIN* is truly new alchemy. Her elaborate bio-regional landscape which graces the cover of the New *Stepping Stones* reader is now available as a large poster for those of you to whom a picture is worth a thousand words—or more! This urban/rural scenario vividly details local economies and energies at work and play. Renewable and renewing! If you are trying to envision just how all our new ideas and new tools come together, this little bit of wizardry will help you get there.

ENVIRONMENTAL DESIGN PRIMER

Tom Bender

207 pp., 1973, $5.95

If, in designing and building our surroundings, we want to restore our fundamental unity with our environment and the cosmos, we must push beyond just "functional" considerations. We need to re-establish a deeper sense of purpose. These meditations on ecological consciousness are offered to help us set our hearts and minds straight, before we put our hands to work. A penetrating collection of short thought-pieces, quotations, symbols and dreams.

RAINPAPER NO. 1, CONSUMER GUIDE TO WOODSTOVES

Bill Day

16 pp., Revised Jan. 1979, $2.00

No matter how you split it, wood is re-emerging as an important factor in home heating. To help insure the wood energy transition is one committed to safety and efficiency, wood stove consumerist Bill Day has closely monitored the availability and reliability of these products. His newly-revised and expanded *Consumer Guide* is a compilation of his articles in *RAIN*, covering the selection, installation and repair of woodstoves, wood cookstoves and wood furnaces. Included are helpful notes on fireplace retrofits and chimney maintenance. Essential reading for those of you interested in this revitalized energy alternative.

RAINDEX

Lane deMoll and Linda Sawaya

48 pp., 1979, $4.00

A complete index to the first four volumes of *RAIN* (October 1974 through September 1978) and *Rainbook*, including a four-page, issue-by-issue listing of articles. Indispensible for information networkers, libraries and new friends of *RAIN*, the *Raindex* is the perfect way to discover our back pages and the magic that lies therein. Yearly supplements will be available for each subsequent volume every October.

RAINBOOK:
RESOURCES FOR APPROPRIATE TECHNOLOGY

Editors of RAIN

256 pp., 1977, $7.95

This is the book that has turned so many heads around. Drawing together such diverse concerns as economics, energy, health, agriculture and communications into a larger picture, *Rainbook* opens up new doors for those of us seeking the ways and means to change our communities and our lives. Essentially the Best of *RAIN Magazine* through early 1977, *Rainbook* is as comprehensive a primer/resource book as you will ever find, with thousands of listings on groups, contacts, literature and further sources of information. If you have a question about appropriate technology, *Rainbook* probably has the answer—or it can tell you where to get it. Fully indexed and profusely illustrated. (Updated via monthly issues of *RAIN*.)

URBAN ECOTOPIA POSTER

Diane Schatz

22"x33", 1976, $3.00

SUBURBAN ECOTOPIA POSTER

Diane Schatz

22"x30", 1976, $3.00

The first exciting glimpses of an Ecotopian vision. . . . Chances are you've already seen Diane Schatz's *Urban Ecotopia Poster*—on the cover of *Rainbook*, reprinted in countless numbers of books and publications, or on a friend's wall. Its city street scene gives literal expression to the idea of urban self-reliance—where cottage industries, cooperative institutions and appropriate technologies combine to make the city a habitable and happy place to be. . . . If your concern is reinhabiting the suburbs, you should visit Diane's *Suburban Ecotopia*, where the same potential can be seen in gardens, solar greenhouses and windmills. Both of these line-drawn posters are rich in detail and perfect for coloring.

SHARING SMALLER PIES

Tom Bender

38 pp., 1975, $2.00

A small classic that discusses how changing resource/energy realities are giving rise to new directions and changing possibilities—in human values and individual actions, in our institutions and politics. This is the kind of formative thinking that has helped to set the stage for the advent of appropriate technology.

LIVING LIGHTLY
ENERGY CONSERVATION IN HOUSING

Tom Bender

38 pp., 1973, $2.00

Here is an early overview of designing and building energy efficiency and resource conservation into our shelters—from water and waste to heating, cooling and lighting. A good overview on why we should be living lightly—and just what that might mean.

EMERGING ENERGY POLICY PRINCIPLES

Tom Bender

9 pp., 1974, $1.00

COSMIC ECONOMICS

Joel Schatz and Tom Bender

8 pp., 1974, $1.00

Two significant papers to come out of Oregon's early energy research and planning efforts; here are sound principles for wending our way through the coming economic/energy transition. Simple outlines of effective economic mechanisms to guide that transition.

Cut on dotted line and return bottom portion with your order; poster remains intact!

ORDER FORM

RAIN: Journal of Appropriate Technology Subscription

2 years/20 issues, $25.00 $ _____

1 year/10 issues, $15.00 $ _____

1 year/10 issues, "Living Lightly" (income less than $5,000), $7.50 $ _____

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Back issues of *RAIN* currently available: Vol. I: No. 7, 8, 9; Vol. II: all 9 issues; Vol. III: all 10 issues; Vol. IV, all 10 issues, $1.00 each. Vol. V and on, $1.50 each. For a list of what's inside each back issue of *RAIN* through Vol. IV, send us a SASE or see the center section of *Raindex*.

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_____ Sharing Smaller Pies, $2.00
_____ Consumer Guide to Woodstoves, $2.00
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RAINDROPS

Well, gosh, the first encouraging response on *RAIN*'s well-received promotional mailing has started coming through the purple mailbox—in fact, some of you reading this issue for the first time are among our willing captives. In several weeks, we've already logged in 241 returns, 116 of which included new subscriptions, netting us over $3,000 as of April 5th and recovering most of our costs incurred in the process, with the exception of worn-out fingers and thumbs. It's not yet clear if we will be successful according to the standard direct mail rule of thumb (one to two percent return), but our hopes haven't been dashed. Even so, we continue to need your help in getting the good word out. This can be done simply in three ways: mention *RAIN* to one of your most trusted confidantes or paramours; ask your favorite bookstore to consider carrying *RAIN*, a professional journal with grassroots appeal; go to your nearest library and tell them about the volume of information that we access—they won't be able to resist! We'll send a sample copy to any and all. More promotional updates to come—keep those chins up . . .

RAIN was so busy last month we forgot to give any explanation for the mysterious new names in our staff box. Actually, Jeff Paine and Pauline Deppen are no mysteries but longtime *RAIN* friends.

Jeff, an Oregonian from way back, first dropped by our office to explore work possibilities almost a year ago. Now he's here part-time as one of *RAIN*'s interns and using the rest of his time to do house carpentry and more. His is a good example for people looking to find some balance in their working/living situations. Jeff brings with him to *RAIN* a strong interest in solar systems of various kinds, and you'll most likely be seeing some entries on this field by him in upcoming issues.

Pauline and her architect spouse Dave have known and corresponded with *RAIN* for a long time. The Deppens moved to Portland from the Philadelphia area a year ago to work more consciously on being rooted in a place, and to reclaim some small, neglected piece of it all with their personal vision of appropriate homesteading. Pauline has done a great deal of organizational work, including a stint at Colorado's Wright-Ingraham Institute, and will be using her various skills once weekly to help us stay on top of *RAIN*'s entropy-prone infrastructure. . . .

Meanwhile, back at the Recycling Switchboard, Nandie Szabo has taken on coordinator's status. So she's had to abandon our subscription pile for the greater glories of the solid waste stream. Nandie will doubtless continue to contribute to *RAIN* in the area of recycling, as well as her other passion, herbs, concoctions, potions and prodigious potations of peculiar propensities. . . . Thanks, Nandie! —SA

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